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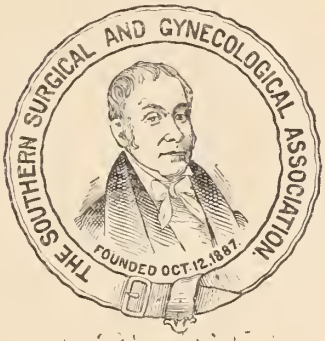

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1889.—Owen, Abraham Miconious, M.D. Professor of Surgery, Hospital of the Medical College; Consulting Surgeon to the City Hospital, County Infirmary, and the Home of the Aged; ex-President of the Mississippi Valley Medical Association. Evansville, Ind.

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1890.—Reed, Charles Alfred Lee, M.D. Professor of

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1893.—SAUNDERS, BACON, M.D. Fort Worth, Texas.

Founder.—Schilling, Nicholas, M.D. Cedar Bayou, Texas.

1893.—Senn, Nicholas, M.D., Ph.D., LL.D. Professor of Practice of Surgery and Clinical Surgery, Rush Medical College; Professor of the Practice of Surgery, Chicago Polyclinic; Attending Surgeon, Presbyterian Hospital; Surgeon to St. Joseph's Hospital; ex-President of the American Surgical Association. Chicago, Ill.

Founder.—Shivers, Offa Lunsford, M.D. Councillor of the Alabama Medical Association. Marion, Ala.

Founder.—Sholl, Edward Henry, M.D. Ex-President of the Medical Association of the State of Alabama; Member of the State Board of Censors and of the Committee of Public Health, Alabama. Birmingham, Ala.

1892.—Simons, T. Grange, M.D. Ex-President of the South Carolina Medical Association; Member of the State Board of Health of South Carolina; formerly President of the Charleston County Medical Society. Charleston, S. C.

1893.—Simons, Manning, M.D. Professor of Clinical Surgery in the Medical College of the State of South Carolina; Surgeon to St. Francis' Infirmary; Surgeon to City Hospital. *Vice-President*, 1895. Charleston, S. C.

1894.—Smith, Reginald K., M D. United States Navy.

Founder.—Souchon, Edmond, M.D. Professor of Anatomy and Clinical Surgery, Medical Department of Tulane University; Member American Surgical Association. New Orleans, La.

Founder.—Stone, Isaac Scott, M.D. Gynecologist to Columbia Hospital; Fellow of the American Association of Obstetricians and Gynecologists; Fellow of the British Gynecological Society; formerly Member of the Medical Examining Board of Virginia. Washington, D. C.

1894.—Talley, D. F., M.D. Ex-President Jefferson County Medical Society; Lecturer on Surgery, Birmingham Medical College. Birmingham, Ala.

Founder.—Taylor, B. W., M.D. Ex-President of the State Medical Association of South Carolina; ex-President of the Columbia Medical Society. Columbia, S. C.

Founder.—Taylor, Hugh M., M.D. Professor of Practice of Surgery, University College of Medicine; Surgeon to Virginia Hospital; ex-President of the Virginia Board of Medical Examiners. Richmond, Va.

1895.—Thompson, F. D., M.D. Fellow American Association of Obstetricians and Gynecologists. Fort Worth, Texas.

1892.—Thompson, J. E., M.D. Professor of Surgery in the University of Texas. Galveston, Texas.

1891.—Tiffany, Louis McLane, M.D. Professor of Surgery in the University of Maryland; Fellow of the American Surgical Association. *President*, 1895. Baltimore, Md.

1890.—Tompkins, Christopher, M.D. Professor of Obstetrics in the Medical College of Virginia. Richmond, Va.

1891.—Trippe, Richard Jefferson, M.D. Ex-President of the Chattanooga Medical Society. Chattanooga, Tenn.

1893.—Tucker, F. H., M.D. President of the Board of Medical Examiners in Second Judicial District of Texas. San Augustine, Texas.

1888.—Tuholske, Herman, M.D. Professor of Surgery, Missouri Medical College. St. Louis, Mo.

1893.—Vander Veer, Albert, M.D. Professor of Clinical, Didactic, and Abdominal Surgery, Albany Medical College; Fellow of the American Surgical Association; ex-President of the American Association of Obstetricians and Gynecologists. Albany, N. Y.

1891.—Walker, Edwin, M.D., Ph.D. Gynecologist, Evansville City Hospital; ex-President of the Indiana State Medical Society; Fellow of the American Association of Obstetricians and Gynecologists. Evansville, Ind.

Founder.—Wathen, William Hudson, M.D. Professor of Abdominal Surgery, Obstetrics, and Gynecology in the Kentucky School of Medicine; ex-Chairman of the Section on Obstetrics and Diseases of Women, American Medical Association; ex-President of the Kentucky State Medical Society; Consulting Gynecologist to the Louisville City Hospital; Fellow of the American Gynecological Society. Louisville, Kentucky.

1895.—Weist, Jacob Rowland, A.M., M.D. Surgeon to St. Stephen's Hospital; Secretary American Surgical Association. Richmond, Indiana.

1888.—Westmoreland, Willis F., M.D. Professor of Surgery, Atlanta Medical College. Atlanta, Ga.

1897.—Williams, B. F., M.D. Professor of Materia Medica and Therapeutics and Lecturer on Orthopedic Surgery, Medical

College of Virginia; Orthopedist to the Old Dominion Hospital and City Free Dispensary. Richmond, Va.

1890.—Wilson, Henry Parke C., M.D. Ex-President of the Medical and Chirurgical Faculty of Maryland and of the Baltimore Academy of Medicine, and of the Baltimore Gynecological and Obstetrical Society; Surgeon to the Hospital for Women, of Maryland; Consulting Gynecologist to St. Agnes' Hospital; Consulting Surgeon to the Johns Hopkins Hospital; Fellow of the British Medical Association and of the British Gynecological Society; ex-President of the American Gynecological Society. Baltimore, Md.

Founder.—Wilson, J. T., M.D. Ex-President of the North Texas Medical Association. *Vice-President*, 1891. Sherman, Texas.

1891.—Wyeth, John Allan, M.D. Professor of Surgery, New York Polyclinic; Consulting Surgeon to St. Elizabeth's Hospital; Visiting Surgeon to Mt. Sinai Hospital and Polyclinic Hospital; Honorary Member of the Texas State Medical Association; ex-President of the New York Pathological Society. New York, N. Y.

CONSTITUTION.

ARTICLE I.

The name of this Association shall be The Southern Surgical and Gynecological Association.

ARTICLE II.

The object of this Association is to further the study and practice of surgery and gynecology among the profession of the Southern States.

ARTICLE III.

This Association shall adopt and conform to the Code of Ethics of the American Medical Association.

ARTICLE IV.

Section 1. Any reputable physician, who practises surgery or gynecology, and who is vouched for by two members of the Association, and recommended by the Council, shall be eligible to membership in this body.

Sec. 2. The honorary members shall not exceed ten in number, and shall enjoy all the privileges of other members, excepting to vote or hold office, but shall not be required to pay any fee.

ARTICLE V.

Section 1. The officers of this Association shall be a President, two Vice-Presidents, a Secretary, a Treasurer, and a Council, elected by ballot, without nomination.

Sec. 2. The President and Vice-Presidents shall be elected for one year, and the President shall not be eligible for re-election at any time; the Secretary and Treasurer, each, for five years; and the Council as provided for in the By-laws.

ARTICLE VI.

SECTION 1. It shall be the duty of the President to preside at all meetings of the Association; to give the casting vote; to see that the rules of order and decorum be properly enforced in all deliberations of the Association; to sign the approved proceedings of each meeting, and to approve such orders as may be drawn upon the Treasurer for expenditures ordered by the Association.

SEC. 2. In the absence of the President the first Vice-President shall preside, and in his absence the second Vice-President shall preside.

SEC. 3. In the absence of all three, the Association shall elect one of its members to preside *pro tem.*

SEC. 4. It shall be the duty of the Secretary to keep a true and correct record of the proceedings of the meetings; to preserve all books, papers, and articles belonging to the archives of the Association; to attest all orders drawn on the Treasurer for moneys appropriated by the Association by the seal of the Association; to keep the account of the Association with its members; to keep a register of the members, with the dates of their admission and places of residence. He shall collect all moneys due from the members and pay to the Treasurer, taking his receipt for the same. He shall report such unfinished business of previous meetings as may appear on his books requiring action, and attend to such other business as the Association may direct. He shall also supervise and conduct all the correspondence of the Association, and be chairman of the Publishing Committee.

SEC. 5. It shall be the duty of the Treasurer to keep a correct record of all moneys received from the hands of the Secretary, giving his receipt for the same; pay them out by order of the Association as indorsed by the President and attested by the seal in the hands of the Secretary.

SEC. 6. It shall be the duty of the President of the Association to appoint a Committee of Finance, consisting of three members of the Association, whose duty it shall be to examine the books of the Secretary and Treasurer, and report on the same at the next session of the Association.

ARTICLE VII.

Vacancies occurring in the offices of the Association shall be filled by appointment of the President until the next meeting. He shall also have the appointment of all committees not otherwise provided for.

ARTICLE VIII.

This Constitution shall take effect immediately from the time of its adoption, and shall not be amended except by a written resolution, which shall lie over one year, and receive a vote of two-thirds of the members present.

ARTICLE IX.

Any member who for three consecutive years fails to attend the meetings shall be dropped from the roll of membership.

BY-LAWS.

ARTICLE I.

The Southern Surgical and Gynecological Association shall meet annually on the second Tuesday of November at 10 A.M., at such place as may be designated by the preceding meeting.

ARTICLE II.

The members present shall constitute a quorum for business.

ARTICLE III.

The annual dues of each member shall be $10, paid in advance.

ARTICLE IV.

The usual parliamentary rules governing deliberative bodies shall govern the business workings of this Association.

ARTICLE V.

All questions before the Association shall be determined by a majority of the votes present.

ARTICLE VI.

The President shall deliver an annual address at each meeting of the Association.

ARTICLE VII.

The Secretary of the Association shall receive, at each annual Session, a draft from the President, drawn on the Treasurer, for the sum of $100 for services rendered the Association, and to this shall be added the necessary expense incurred in the discharge of his official duties.

ARTICLE VIII.

It shall be the duty of the Secretary, one month prior to the annual meeting, to notify by circular letters the members of the Association, and urge their attendance.

ARTICLE IX.

The authors of all essays shall notify the Secretary, six weeks prior to the meeting, of the titles of their essays, so that they may be incorporated in the circular letter to the members.

ARTICLE X.

COUNCIL.

The Council shall consist of five members; and of those elected at the primary meeting, the first shall serve five years, the second four, the third three, the fourth two, and the fifth one year; so

that subsequently one member of the Council shall be elected annually to serve five years. The President and Secretary shall be *ex-officio* members of the Council.

This Council shall organize by electing a Chairman and Secretary, and shall keep a record of its proceedings.

The duties of this Council shall be—

1. To investigate applications for membership and report to the Association the names of such persons as are deemed worthy.

2. To take cognizance of all questions of an ethical, judicial, or personal nature, and upon these the decision of the Council shall be final; *provided*, that appeal may be taken from such decision of the Council to the Association, under a written protest, which protest shall be sustained by the Association, and the matter shall then be referred to a special committee, with power to take final action.

3. All motions and resolutions before the Association shall be referred to the Council without debate, and it shall report by recommendation at as early an hour as possible.

ARTICLE XI.

The following are the standing committees of the Association to be filled by the President and to report at the next annual meeting subsequent to their appointment, viz.: Committee of Arrangements and Committee of Publication. The Committee of Publication shall consist of three members, one of whom, the Secretary of the Association, shall also be the chairman of the said committee. The Committee of Arrangements shall consist of five members.

ARTICLE XII.

The Committee of Publication shall have full power to omit from the published TRANSACTIONS, in part or in whole, any paper that may be referred to it by the Association, unless specially instructed to the contrary by the Association, which will be determined by vote.

ARTICLE XIII.

Any member failing to pay his dues for more than one year shall be dropped.

ARTICLE XIV.

Every physician making application for membership shall present with his application a paper on some surgical or gynecological subject.

ARTICLE XV.

No paper shall be read before this Association which does not deal strictly with a subject of surgical or gynecological importance.

ARTICLE XVI.

No paper read before the Association shall be published in any medical journal or pamphlet for circulation, as having been read before the Association, without having received the indorsement of the Committee of Publication.

ARTICLE XVII.

The reading of papers shall be limited to twenty minutes each, except by permission of the Association.

MINUTES OF THE PROCEEDINGS

AT THE

TENTH ANNUAL MEETING

OF

THE SOUTHERN SURGICAL AND GYNECOLOGICAL ASSOCIATION,

HELD AT THE

SOUTHERN HOTEL,

St. Louis, Mo.,

NOVEMBER 9, 10, AND 11, 1897.

TENTH ANNUAL MEETING.

The following-named members were present.

AMEISS, F. C.	St. Louis, Mo.
BOSHER, L. C.	Richmond, Va.
BOVEÉ, J. W.	Washington, D. C.
BROKAW, AUGUSTUS A. V. L.	St. Louis, Mo.
BRYSON, JOHN P.	St. Louis, Mo.
CARTLEDGE, A. M.	Louisville, Ky.
CROFFORD, T. J.	Memphis, Tenn.
CUNNINGHAM, R. M.	Birmingham, Ala.
DAVIS, J. D. S.	Birmingham, Ala.
DAVIS, W. E. B.	Birmingham, Ala.
DIXON, ARCH.	Henderson, Ky.
DORSETT, W. B.	St. Louis, Mo.
DOUGLAS, RICHARD	Nashville, Tenn.
EARNEST, J. G.	Atlanta, Ga.
ENGELMANN, G. J.	Boston, Mass.
FORD, W. H.	St. Louis, Mo.
GLASGOW, F. A.	St. Louis, Mo.
GOGGANS, JAS. A.	Alexander City, Ala.
GRANT, H. H.	Louisville, Ky.
HAGGARD, W. D., Jr.	Nashville, Tenn.
HALL, R. B.	Cincinnati, O.
HARLAN, J. J.	Alexander City, Ala.
HEFLIN, WYATT	Birmingham, Ala.
HOLMES, J. B. S.	Atlanta, Ga.
JELKS, J. T.	Hot Spring, Ark.
JOHNSTON, GEO. BEN	Richmond, Va.
KELLY, H. A.	Baltimore, Md.
LAIDLEY, L. H.	St. Louis, Mo.
McMURTRY, L. S.	Louisville, Ky.
MATHEWS, J. M.	Louisville, Ky.

MUDD, H. H.	St. Louis, Mo.
MYERS, W. H.	Fort Wayne, Ind.
NOBLE, GEORGE H.	Atlanta, Ga.
REAMY, T. A.	Cincinnati, O.
REED, C. A. L.	Cincinnati, O.
TALLY, D. F.	Birmingham, Ala.
THOMPSON, F. D.	Fort Worth, Texas.
TIFFANY, L. M.	Baltimore, Md.
TUHOLSKE, HERMAN	St. Louis, Mo.
WEIST, J. R.	Richmond, Ind.
WILSON, J. T.	Sherman, Texas.

Letters and messages of regret were received from a number of the members who were unable to attend the meeting.

First Day—*Tuesday, November* 9, 1897.

Morning Session.—The meeting was called to order by the President, Dr. George Ben Johnston, of Richmond, Va., at 9.30 a.m. Prayer was offered by the Rev. Samuel J. Nichols, D.D., of St. Louis.

President Johnston then introduced the Hon. Charles Nagel, who delivered the following

ADDRESS OF WELCOME.

Mr. President and Gentlemen: It has been the custom in many places, and no doubt you may have expected it, to have a welcome on occasions of this character extended in an official form. Indeed, in years past, it has fallen to me to take that part at times, and of all meaningless acts of official life that has seemed to me to be the most pronounced; for, in truth, a modern city is in no position, and has no right, to extend hospitality. The old saying, "the freedom of the city," of which we hear so much, is an ancient tradition which has lost its place in our modern system. The liberty with which you and we are unusually honored stands upon an authority greater than this city. It rests upon the Constitution of the United States itself. The city can take from it nothing and can add to it nothing. To put it plainly, the only kind of hospitality that a city could possibly extend is that of license, and for license gentlemen have

no use, especially in these days when the lines between liberty and license are being exceedingly closely drawn. But I am happy to say, that where the city officially fails the citizens have always been called on to supply the want. While not directly deputed by any one to extend to you a few words of welcome in behalf of the city, still I do not hesitate to assure you of the heartiest welcome of the entire community. A distinguished visit of this kind is one of the few occasions when any citizen, however humble, may assume, and without special authority, to speak for the entire people, and he will speak, whoever he may be, the minds and hearts of our people the more as he succeeds in clothing his words of welcome in the superlative form. You will please understand me, therefore, to extend the welcome to you in that form in the name of all the citizens, and especially in the name of the members of your profession, for they, above all, must realize the importance of a gathering of this kind, affording opportunity for the exchange of views, for the observation of new conditions, for the study and investigation of those causes which alone can lead the profession from the stage of cure to the goal of prevention. I believe in these gatherings, and I have often had a fear that economic principles, which are really intended only for the government of material interests, may be too quickly applied in this country to the development of the sciences and the arts. I believe artists and literary men make a mistake when they place obstacles in the way of introduction of foreign work. The direct result of this may be injurious, but the greater demand for better work must have infinitely more influence in making its impression and in enlightening the entire people. We all know that a strong bar of lawyers means more business because it creates confidence in counsel. We all know that a strong fraternity of medical men brings a beneficent influence, prompt and timely treatment, and thus many a case is cured that otherwise would have dragged along in desperation. It is absolutely essential that we have these gatherings; it must be the part of wisdom to have them to afford an opportunity for exchange of experiences, to aid and build up each other in their chosen pursuit. It seems to me that your responsibility has extended very much further in this country. I say it not only because of your own interest, I say it not only because of the great strides that have been made in the development of science,

but because it adds to your burdens more and more arduous labor and responsibility. I say it because to my mind there has been created a new department of public interest. Sanitary regulation has taken place in the older countries, and even now in our country its administration must be left to you. We are in the habit of saying that from France we borrow the broad idea of equality and liberty; we have been glad to acknowledge that England gave us, vaguely at least, our constitutional legislative form, and that perhaps Germany, with her scientific research, is now seeking to impress the entire world, and even political systems, with the necessity of sanitary regulation and reform. We leave these matters, however, to those men of your profession who are able to cope with them. The teacher has always been associated with public work in a way, because he helps to mould the citizen. The lawyer has always held a quasi-public position —perhaps too often; the business man is interested directly in the immediate results of legislation, and your profession has only now been assigned a place which for a long time was considered strictly private; it has taken on the color of public obligation. I say, therefore, that this department, which is bound to be created, will be for the health and welfare of the entire nation. We must look to you to exchange for us the experiences of the various communities of our country and give us the benefit of the riper experience of older nations; in other words, in this respect the political patient must be turned over to you. If you stand appalled at the size and perhaps at the condition of the patient, it is to be hoped that you will not despair in undertaking to effect a cure, even if you find it necessary to resort to the knife to help save our beloved body politic. I thank you. (Applause.)

RESPONSE TO THE ADDRESS OF WELCOME BY PRESIDENT JOHNSTON.

Mr. Nagel and Fellows of the Southern Surgical and Gynecological Association: It is the practice of this Association to select its place of meeting. We are in St. Louis, not as invited guests in the sense that either the citizens or the profession of St. Louis invited us, but our knowledge of the public-spirited character of the citizens of this city and the warm-heartedness of the profes-

sion here induced us to act upon the assumption that as invited guests we are thrice welcome, and therefore we are prepared to receive the welcome which the Hon. Mr. Nagel has so eloquently extended to us. (Applause.)

Dr. H. H. Mudd, Chairman of the Committee of Arrangements, made the following verbal report:

REPORT OF THE COMMITTEE OF ARRANGEMENTS.

Mr. President and Members of the Southern Surgical and Gynecological Association: The purpose of the Committee of Arrangements was to give full facilities for the scientific programme as made out by the Association. We have not then sought to divert your attention from the work of the Association by providing clinics or special exhibits in connection with the work.

The entertainments for the Association are somewhat limited. I think perhaps it is the fault of your committee in letting opportunities to be entertained by good citizens slip away, and we owe you an apology on that account. But let me say to you, that if the entertainments are limited, you are welcome to them. We have in contemplation for you a banquet to-morrow evening at 7 o'clock, and in order that the gentlemen may receive their cards for the banquet it will be necessary for them to register with the Secretary of the Committee of Arrangements, Dr. J. Campbell Smith. It might be well also to say that all of the members of the Association and all of the visitors, as well as those of the local profession who choose to take advantage of the opportunity, will be welcome at the banquet.

For this evening we have a reception at my house. Every member is invited, as well as guests who come from a distance, and the local profession.

On behalf of the profession I might say that the name of the Association is very suggestive of a phase for the development of modern surgery—the junction of gynecology and surgery has been very close. I remember very well that it is only a few years ago that the number of operations in gynecological work was very few. My earliest remembrance carries me back to the time when the two chief operations were closure of vesico-vaginal fistula and imperfect repair of the lacerated perineum.

One of these pathological conditions has almost escaped us on account of the improvements in the delivery of women, while the other is very much more perfect. A wonderful advance has been made in gynecology during the past few years. The field has been so attractive, so varied, and beautiful, that it has made of all gynecologists surgeons and of all surgeons gynecologists.

We have met upon common ground, and upon that ground we vie with each other in the perfection of operative measures. Among your membership you have men who have reflected honor upon the profession in the advances made in this kind of work. You have men with you who reflect the advanced thought; men of profound knowledge; men who are learned in the general truths which underlie the welfare of all humanity. They vie with each other in expressing by word and by action this advanced thought. You have men who have been bold to execute where their vision was clear, but men who never lost sight of the individual in their enthusiasm for their work; men who, reflecting this advanced thought and action, have at the same time exercised an enlightened and conservative judgment. We believe that this Association stands as an exponent of this advanced thought and of this conservative judgment. Believing this, the profession of St. Louis extends to you a most hearty welcome. We hope that every one of you will enjoy the occasion and enjoy all that the city can afford to you. If any of you are not happily placed, we ask as a committee that you will report to us in order that we may help you out of the difficulty. (Applause.)

By vote of the Council several members of the local profession of St. Louis were invited to participate in the discussions.

Papers were then read as follows:

1. "Gallstones in their Relation to Cancer of the Gall-tract," by Dr. Charles A. L. Reed, of Cincinnati.

Discussed by Drs. Ricketts, Eastman, Jelks, Hall, Cartledge, Tiffany, Reamy, and in closing by the essayist.

2. "The Disposal of the Stump in Appendicitis Operations," by Dr. W. D. Haggard, Jr., of Nashville.

This paper was discussed by Drs. Joseph Eastman, Kelly, Bovée, Weist, and in closing by the essayist.

3. "Report of Four Cases of Abscess of the Uterus," by Dr. George H. Noble, of Atlanta.

Discussed by Drs. Cartledge, Bovée, Crofford, Douglas, W. E. B. Davis, Earnest, Cunningham, and the discussion closed by the author of the paper.

4. "The Study of Retroperitoneal Neoplasms and Suppurations, with Especial Reference to Diagnosis," by Dr. Richard Douglas, of Nashville.

Discussion by Drs. Engelmann and Cartledge.

On motion, the Association adjourned until 2.30 P.M.

Afternoon Session.—The Association re-assembled at 2.30 P.M., and was called to order by the President.

5. "Tubal and Ovarian Hemorrhage Resembling Ruptured Ectopic Pregnancy," by Dr. J. Wesley Bovée, of Washington, D. C.

Discussed by Drs. Douglas and Crofford.

6. "A Case of Extra-uterine Pregnancy Operated on at the Seventh Month," by Dr. J. G. Earnest, of Atlanta.

Discussed by Drs. Bovée, Crofford, Dixon, Douglas, McCandless, Hall, Weist, Noble, and the discussion closed by the essayist.

7. "Cystic Disease of the Mamma," by Dr. L. McLane Tiffany, of Baltimore.

Discussed by Drs. Hulbert, Douglas, and in closing by the essayist.

8. "Exhibition of Radiographs, with Remarks," by Dr. A. V. L. Brokaw, of St. Louis, Mo. The author exhibited two hundred radiographs.

On motion of the Secretary the Association then adjourned until Wednesday, 9.30 A.M.

SECOND DAY—*Wednesday, November* 10, 1897.

Morning Session.—The Association met at 9.30 o'clock, and was called to order by the President.

Drs. F. Henrotin and Frank Andrews, of Chicago, were accorded the privileges of the floor.

9. "Chronic Proctitis," by Dr. D. F. Talley, of Birmingham, Ala.

The discussion was opened by Dr. Kelly, and continued by Drs. Mathews, Jelks, Millican, and in closing by the essayist.

10. "The Sources and Diagnosis of Pyuria," by Dr. Howard A. Kelly, of Baltimore.

Discussion was opened by Dr. Henrotin (by invitation), and continued by Drs. McMurtry, Reed, Hall, W. E. B. Davis, Cartledge, and the discussion closed by the author.

11. "The Early Diagnosis and Treatment of Cancer of the Uterus," by Dr. William H. Myers, of Fort Wayne, Ind.

Discussed by Drs. Bovée, Eastman, Crofford, and Reamy.

On motion, the Association adjourned until 2.30 P.M.

Afternoon Session.—The Association reassembled at 2.30 o'clock, and was called to order by the President.

12. "A Case of Tetanus Following a Surgical Operation," by Dr. F. D. Thompson, of Fort Worth, Texas.

Discussed by Drs. Douglas, Engelmann, and in closing by the author of the paper.

At this juncture President Johnston delivered his Address. He selected for his subject "The Prevalence of Specialism and Who shall be Specialists."

On motion of Dr. Cartledge, a vote of thanks was tendered to the President for his admirable address.

13. "Ovariotomy in the Aged," by Dr. A. M. Cartledge, of Louisville.

14. "Operative Treatment for Enlarged Prostate," by Dr. H. H. Grant, of Louisville, Ky.

Discussed by Drs. Prewitt, Dixon, Jelks, and the discussion closed by Dr. Grant.

15. "Empyema, With a Report of Twenty Cases," by Dr. James A. Goggans, of Alexander City, Ala.

Discussed by Drs. Cartledge, Andrews, Prewitt, and discussion closed by Dr. Goggans.

On motion, the Association adjourned until Thursday, 9.30 A.M.

THIRD DAY—*November* 11, 1897.

Morning Session.—The Association met at 9.30 o'clock, and was called to order by the President.

16. "Improved Technique in Operation for Intraligamentous Cyst, with Presentation of Specimen," by Dr. Rufus B. Hall, of Cincinnati, Ohio.

Discussed by Drs. Ricketts, Tuholske, Andrews, Laidley, Crofford, and discussion closed by Dr. Hall.

17. "Personal Observations in Abdominal Surgery," by Dr. H. Tuholske, of St. Louis, Mo.

Discussed by Drs. McMurtry, Hall, W. E. B. Davis, Ricketts, Crofford, and in closing by the author of the paper.

18. "Symphysiotomy as Compared with Other Obstetric Operations," by Dr. George J. Engelmann, of Boston, Mass.

Discussed by Dr. Ford, of St. Louis.

19. "Plaster-of-Paris Dressing," by Dr. John D. S. Davis, of Birmingham, Ala.

Discussed by Drs. Cunningham, Talley, and the discussion closed by the essayist.

Dr. F. Andrews, of Chicago, exhibited an instrument for removing silkworm-gut sutures from the vagina in cases of perineorrhaphy, trachelorrhaphy, vesico-vaginal or recto-vaginal fistula.

The following papers were read by title:

1. "Surgery of the Gall-bladder and Ducts," by Dr. McFadden Gaston, of Atlanta, Ga.

2. "A Series of Eight Amputations at the Shoulder-joint Without Mortality," by Dr. Manning Simons, of Charleston, S. C.

3. "Peculiarities of the Surgical Diseases and Injuries to the Face," by Dr. Edmond Souchon, of New Orleans, La.

4. "Sarcoma of the Uterus, with Specimens and Cases," by Dr. Lewis S. McMurtry, of Louisville, Ky.

5. "Two Cases of Intestinal Obstruction Caused by Meckel's Diverticulum," by Dr. J. E. Thompson, of Galveston, Texas.

6. "Multiple (Triple) Stricture of Probable Tubercular Origin within Thirteen Inches (33 cms.) of the Jejunum. Resection and Circular Enterorrhaphy by Maunsell's Method, followed by Complete Recovery; with Remarks on Multiple Intestinal Strictures," by Rudolph Matas, M.D., of New Orleans, La.

7. "Convenient Method for Sterilizing Instruments and Caring for Them Afterward," by Dr. Edwin Walker, of Evansville, Ind.

8. "Excision of the Tongue," by Dr. George Foy, of Dublin, Ireland.

9. "Nephrotomy for Pus in the Kidney," by Dr. W. E. B. Davis, of Birmingham, Ala.

Dr. R. M. Cunningham, of Birmingham, Ala., offered the following resolution of thanks:

Resolved, That we hereby extend to the Committee of Arrangements as a whole, and to its Chairman in particular, our thanks for the splendid reception given this Association and its friends at his residence; to the management of the Southern Hotel for courtesies; to the profession generally in St. Louis, for the splendid manner in which they have entertained us and for the hospitality shown on every hand; to the citizens for the high appreciation manifested toward us as surgeons and gynecologists, and to the newspapers for the favorable notices of our proceedings.

On motion, the resolution was unanimously adopted.

Secretary Davis read the report of the Council, as follows:

Your Council begs leave to make the following report: The applications of the gentlemen whose names are presented herewith have been favorably acted upon for membership, and they are recommended to the Association as members:

Robert F. Williams . . .	Richmond, Va.
W. B. Dorsett	St. Louis, Mo.
F. C. Ameiss	St. Louis, Mo.
J. P. Bryson	St. Louis, Mo.
Frank S. Glasgow . . .	St. Louis, Mo.
L. H. Laidley	St. Louis, Mo.

As officers for the ensuing year the Council begs leave to offer the following;

President—Dr. Richard Douglas, Nashville, Tenn.

Vice-Presidents—Drs. H. H. Mudd, of St. Louis, Mo., and James A. Goggans, of Alexander City, Ala.

Secretary—Dr. W. E. B. Davis, of Birmingham, Ala.

Treasurer—Dr. A. M. Cartledge, of Louisville, Ky.

For vacancy in Council caused by the expiration of the term of Dr. Haggard, Dr. George Ben Johnston; for vacancy in Council caused by death of Dr. Bedford Brown, Dr. L. McLane Tiffany, of Baltimore.

Place of meeting, Memphis, Tenn. Time, second Tuesday in November, 1898.

On motion of Dr. Wilson, the report of the Council was adopted and the gentlemen whose names were read elected.

There being no further business, on motion the Association adjourned.

W. E. B. Davis, M.D.,
Secretary.

ANNUAL ADDRESS OF THE PRESIDENT.

By George Ben Johnston, M.D.,
Richmond.

Gentlemen of the Southern Surgical and Gynecological Association: I have not mistaken your motive in choosing me as your President. I am aware that you did not intend to exalt the individual, but to reward a faithful member whose heart is in this Association, and whose highest privilege is to style himself a member. I approach my duties with many misgivings. I rely on the same generous spirit which prompted the bestowal of the honor to pass over my imperfections and to aid me in conducting the affairs of this meeting to a happy termination.

The President is allowed great latitude in his selection of a theme for his annual address. I have avoided a strictly professional subject, and have thought proper to discuss briefly the subject of *the prevalence of specialism and who shall be specialists.*

The tendency of the times is toward specialism in medicine. This is unavoidable, and, if properly pursued, is also desirable. The science of medicine has grown to such gigantic proportions that no one mind can any longer thoroughly master every detail of it; hence the necessity for specialism.

It is desirable because it gives to the profession and the people the most intelligent consultants and the most skilled attendants the art of medicine can supply. It is, therefore, not wise to hamper its legitimate growth. It should be regulated, however, and kept within proper bounds, so that only proper persons will become specialists.

The principal reasons for the existence of specialism are:

The growth and development of medicine, the peculiar aptitudes and tastes of individuals and their opportunities for acquiring a special knowledge and particular skill, the larger revenues afforded, the greater leisure and celebrity to those who pursue them, and the demand of an improperly educated public.

I would divide specialists into two kinds—the true and the pseudo-specialists. I would define a true specialist as one specially distinguished for learning and skill in a given pursuit; the false, as one having merely a special occupation. I would make very clear the difference between these varieties, for one reaches to the distinction of specialist by reason of his training, experience, skill, and wisdom, whereas the other is made a specialist by the possession of a diploma, a door-plate, and a "kit" of special instruments. The profession recognizes the excellence and value of the one, whilst the other derives his standing from the magic term "specialist," which is so ill understood by the public. The first is of value alike to his colleagues, to his art, and to the world; the second possesses no gifts which render him superior to others. One is evolved by well-defined laws; the other is ready-made. One has built upon a foundation made up of the base stones of his art; he is master of every detail, deficient in none. The other has built upon insufficient general information and no practical experience. The professional qualities of the true specialist may be likened to a massive pyramid, the finished capstone of which constitutes the specialty. This pyramid of experience, learning, and skill is a stable edifice, a pillar of strength which cannot topple or reel. It is a mark by which all recognize superior design and masterful workmanship. In the case of the pseudo-specialist this pyramid of learning is inverted. There is no base of a knowledge of detail, of general information, of professional attainments. The structure has no foundation in fact. It begins with the specialty, and its growth spreads as it ascends, overshadowing what is below, thus rendering it an unstable, top-heavy structure, which is likely to fall before the winds of uncertainty and doubt.

Holmes likens specialists to "coral insects who have built up a reef." When he used this simile he had in mind the giants of the profession, the broad, learned, and wise specialists, who came from the ranks of general practitioners, possessed of a knowledge of detail, owning a mine of experience which fitted them for the high calling of specialists. That these have been enormously useful to medical science does not admit of discussion. Most of the great advances of recent years have been made by them. They have perfected our methods, enriched our literature, and filled our storehouses of knowledge. The reef they are constructing is no longer submerged in the dark waters of obscurity, but is now a mainland teeming with the fruits of their joint labors. Apart from what they have accomplished for our literature and learning, they have alleviated untold suffering and saved innumerable lives.

The real value of a specialist depends upon his broad culture in the department of general medicine, a mind well stored with valuable facts, experience derived from contact with all forms of disease, and a judgment matured by observation and understanding. Because he is a master in his art, he is capable of pursuing a single branch of it in a manner that makes him a valuable consultant to his fellow practitioner and a skilled attendant to those in need of his services. No man needs a vaster store of learning, greater experience, or profounder acumen than the specialist. He must be prepared to survery the entire field of medicine, take in every aspect of his case, weigh everything bearing upon it from whatever direction, and it is the possession of these very qualities which constitute him a specialist. Many of his powers are rendered valuable and available only after long cultivation. This is true of every pursuit admitting of specialization. It is well understood that a thorough groundwork is essential.

One who is designed to become an officer in our army or navy is taught all that a common soldier or sailor can know or do before he is advanced to the responsible position of

officer. Then why should not the medical man serve a similar apprenticeship in general medicine before he is advanced to the position of "specialist"? How can a tyro, a neophite, boldly step upon the stage of specialism and claim equal rights with him who has won his way to the exalted station of true specialist? Is this not effrontery? When a ship captain wants a pilot he selects a man familiar with the waters he is sailing. He does not choose one who is even indifferently acquainted with the theory of navigation. In the specialist, then, we need a guide, we need a man who knows all that we know and more beside. A consultation to be valuable must be with one who can view the case from every stand-point and throw light on it. A specialist should be able to do this. Is a man fit to be an oculist until he knows all about rheumatism, Bright's disease, syphilis? or a gynecologist until he is a trained accoucheur and familiar with the neuroses of women? I admit that such men often possess great dexterity and manipulative skill, and excel as operators, and are thoroughly versed in the literature of their specialty. Such qualities alone are even dangerous in the absence of that judgment which tells *when* to operate, a more essential requirement than *how* to operate, and which comes only after long practice and close observation.

Proper education, sufficient training, ability and special aptitude mark some men as fit subjects for specialists. These qualities are soon seen by their confrères, who, recognizing superior attainments in given lines, force such men into specialties by consultations and referring special cases to them. The self-constituted specialist needs no such recognition, but depends upon the title of "specialist" to win him patronage from an over-credulous public.

The present system has many disadvantages. It permits unqualified men to foist themselves upon the public as specialists. The profession derives no benefit from such men, because they contribute nothing to the advancement of science. The public ignorantly confides itself to these poorly equipped men, in the belief that they are receiving the best services the

profession affords, and particularly when they pay the highest prices the profession charges. This system, then, has the effect of making specialists "for revenue only."

It is not an uncommon thing for a young man to determine upon a specialty while he is yet engaged in the study of medicine. Perhaps he has been induced to do this in order that he may fill a field which appears to him as a profitable one for a specialist. Perhaps his motive is one of gain, knowing full well that specialists, as a rule, earn larger revenues than general practitioners, and that the life is not so exacting, that opportunities for social and domestic enjoyment are greater, and that other worldly advantages are visible. His studies are shaped toward this end. He neglects branches which do not bear upon his chosen specialty to cultivate those which are in keeping with his purpose. He acquires a sufficient knowledge of medicine to graduate, but does not represent even the best of his class, and upon such training, undeveloped, insufficient, narrow and contracted, he goes forth as a learned specialist.

These are not worthy motives, and yet they move many men into the adoption of specialties. I will not say that all such specialists are bad men or stupid men. I would rather say that they are misguided men, that they are contracted men, that they are narrow men. They often bring into their calling intelligence, zeal, and honest purpose. They may acquire learning by studying the literature of their specialties. They may acquire dexterity and skill as operators. They cannot ever become valuable consultants, because of their deficient knowledge of general medicine, their inexperience in dealing with diseases in general, and because of a lack of breadth and profundity of technical information. Such specialists can hope to succeed only where rivalry is wanting or a community is easily duped.

Bulwer says: "Strive while improving your one talent to enrich your whole capital as a man. It is in this way you escape from the wretched narrow-mindedness which is characteristic of every one who cultivates his specialty alone."

The public has been improperly educated to the idea of specialism. Specialism means more to the lay mind than to the professional. In the public eye all specialists stand upon the same footing, possessing all the needful requirements to give the best service. We have misled the public. We are responsible for this lack of discrimination on its part. When we refer our difficult cases to specialists the public looks upon this as an acknowledgment of their superiority. We have fixed upon no criterion by which a differentiation between the true and the false can be made, or is made, but have permitted the public to regard all specialists as superior to general practitioners.

The time has come when we should disabuse the public mind of this fallacy, and point out the difference, which is great, between the true and the false. The public defines specialists incorrectly, and takes the mere announcement of a specialty seriously. The simple title of specialist in the mind of the public means superiority, and, unfortunately, the public never stops to look beyond the doorplate. The professional eye, on the other hand, differentiates. We know the gold from the dross; the public has not the means of distinguishing between them. The time was when every person needing the services of a specialist consulted his medical adviser. So widespread is specialism, so common, so numerous are specialists, that this system is no longer regarded as essential. Every man chooses his own specialist without consultation with his medical adviser. Consequently, he is as likely to fall into the hands of the narrow, contracted, incompetent so-called "specialist" as into those of the wise, learned, and valuable specialist, and on this very account this widespread specialization may and does work great disaster to the public, because the inexperienced specialist is sure to do unwise, unskilful, and unnecessary things in the ardent pursuit of his special work, and hence the public suffers.

It must be apparent to every *thinking* man that there is a vast difference between the true and the false specialist. We have not insisted upon the recognition of this difference, but

we have permitted the public to estimate the specialist *prima facie.* Have we dealt fairly with the public? Making no discrimination ourselves, how can we expect the public to discriminate? Has not the time come for us to discriminate? When we do discriminate, the public will not be slow to follow us. There must be a remedy for the correction of this evil, and it seems to me the remedy lies in our colleges and special societies.

In the first place, our colleges should vigorously discourage the practice of recent graduates becoming specialists. Teachers should point out to them the error they are about to commit, should counsel them. Colleges should recognize only the real specialists, the men of broad knowledge, in filling their special chairs; and the undergraduate courses in special branches should be along broad and general lines, harmonizing with and broadening the learning in other branches, and not so concentrating the attention of the student on the minutiæ of the special branch as to narrow his point of view and deceive him into believing that he has some special aptitude for this work before he has had opportunity to test practically his fitness in the several branches.

In the next place, our special societies should take a part in the suppression of this short-sighted practice. Membership in our special societies is exceedingly valuable. All of us recognize this. It could be made more desirable if it had a commercial value. If these societies were made up entirely and only of specialists, if it were understood by the profession and the public that none except members of these societies were recognized specialists, membership in them would be eagerly sought by those desiring to become specialists, and the societies could lay no requirements which would not be met by applicants.

If, then, the societies would fix a standard and lay proper requirements, applicants would conform to them. If a fair academic education, sound medical training, hospital service, and a period of at least five years spent in the practice of general medicine were added to the already existing require-

ments of the societies, and if during this period of probation the candidate should have accomplished something so noteworthy in the direction of the special branch to which he wishes to devote himself as to mark him a fit subject to receive the indorsement or imprimatur of a special society, he should then be admitted into its ranks and allowed to practise as a specialist. To make this membership valuable, he should be permitted to use the fact that he is a member of the society in order that the profession might discriminate between him and those who have not met the proper requirements, and likewise that the public should have the means of knowing that he is sanctioned by a proper body qualified to judge of his fitness to execute the work he seeks.

Reform is necessary. It must be accomplished through the instrumentality of our colleges and societies, and when they take the matter properly in hand the general profession and public will lend cordial support, and the evil will perish.

DISPOSAL OF THE STUMP IN APPENDICITIS OPERATIONS.

By William D. Haggard, Jr., M.D.,
Nashville, Tenn.

The life of this Association is contemporaneous with the Victorian era of surgery. No achievement so fittingly typifies the triumphs of the last decade as does the mastery of the most important surgical lesion in the abdomen—inflammation of the vermiform appendix. In 1886–87 Fitz and Sands and Weir made those epoch-marking contributions to the diseases of the right iliac fossa that lifted them from the doubt of misconceived pathology and placed them in the pale of surgical resourcefulness. In 1889 McBurney completed the last link in the chain of its natural history by recognizing the crying necessity for prompt surgical interference and advocating its more general practice. Since then every shade of opinion in the spectrum of logic has been entertained. No subject has ever so engrossed the energy of surgeons whose individual experiences have been so keenly scrutinized, and yet whose results have been so positive and convincing. This subject, to a body of practical workers, cannot be trite, on account of its great seriousness, and is of unfailing interest in its very familiarity. The contributions to its literature make a niche in surgical history replete with continuous endeavor and adorned with unprecedented success. I beg to preface the consideration of one practical phase of the subject by the recapitulation of some facts which constitute the ritual of our beliefs. I concur in the assertion that appendicitis is pre-eminently a surgical lesion. The moment the diagnosis is made it should become the object of the closest surveillance. In the decision of the diagnosis, sur-

gical opinion as to its accuracy by one who is familiar with its manifestations is paramount. Those who are accustomed to study its pathology *in situ* are best fitted to judge. It was said of the lamented Agnew that, in his intimate knowledge of anatomy, the integument to him was transparent. In diseases of the appendix its possibilities are so erratic that the most expert may not be able accurately to estimate its extent, but diagnosticians trained in its observation may recognize its presence with precision, and certify its dangers from positive conviction. I believe in the teaching of Morris, that an infected appendix should be isolated surgically as an infectious disease is isolated hygienically. An infection of the appendix will extend to other tissues; infectious diseases will extend to other indviduals. That many cases of appendicitis will recover without operation will not be controverted, but it is a task of the utmost discrimination and the gravest responsibility to attempt to designate such cases. One can never say with assurance which case may get well, and which case may rapidly grow worse and demand operation so imperatively that the patient would die without it. This is the type of cases that, if delayed, die with it.

Mayo Robson says: "Immediate operation as soon as the diagnosis is made, as originally advocated by McBurney, is better than individualizing or operating when it seems necessary." *When it seems necessary* is synonymous with widespread infection.

Willy Meyer asserts: "In one hundred cases treated by immediate operation as soon as a probable diagnosis is made, more cases will be saved than out of an equal number of cases operated when it seems necessary."

An attempt at refinement in the operative indications may be thus summarized: Acute onset, with rapid pulse, considerable localized tenderness, requires immediate operation; whereas a more gradual commencement, pulse under 100, and the early appearance of tumor, may more safely wait for the formation of competent adhesions and subsequent simple evacuation of abscess.

Progressive increase of pulse-rate, temperature, and tenderness makes early operative intervention imperative, while a gradual subsidence of these signs postpones such measures.

Distended abdomen, vomiting, and rapid pulse signalize extension or general peritonitis. While these cases require the most desperate surgery, Robson has saved five out of six cases of general peritonitis, and many American surgeons have rescued cases where pus ran out on both sides of the table. In chronic relapsing or recurring appendicitis, the indications are most positive. It is almost the universal consensus that after one attack (Meyer), or more than one well-marked attack (McBurney), operation should be done, to anticipate another. While an individual may have one, two, or four mild cases, any of these, or the next, may be so serious as to jeopardize life and make an operation so imperative and under such critical conditions that it will do little else than accentuate the danger of delay and the necessity for operation in the interval after one frank attack.

In the pioneer days of appendicitis work, when the operation was only undertaken in the presence of suppuration, the appendix was entirely gone or was not sought for. Indeed, the question of prolonged search and removal of the appendix in abscess cases is one of the few remaining moot questions in its treatment, and has to be answered by the individual convictions of the operator.

Since surgeons have assumed the responsibility of doing operations for appendicitis that are surgically safe, and less dangerous than an ordinary attack left to itself or treated medically, it behooves them to perfect every detail in the operative technique, to the end that they do not mix danger with beneficence. The principal step in this operation that makes it distinctive is the disposal of the stump after amputation of the appendix.

In the early deliberate operations for the removal of the appendix, surgeons were content to ligate it as they would an artery. The protruding mucous membrane of the stump was cauterized with carbolic acid, the Paquelin cautery, or a

bichloride tablet. Unlike the ligation of an artery, instead of the sterile fluid that organizes behind the constriction, the fluids or contents of the appendix are constantly saturated with numerous species of virulent micro-organisms that find an admirable pabulum in the compressed area under the ligature. This method was supposed to have its analogy in the ligation of the pedicle of an ovarian tumor, but we now know that it is wholly different from tying an aseptic stump for hæmostasis. It likewise finds no analogy in the ligation for ablation of the appendages, which have no connection with the intestines, cannot be inverted, and are usually sterile or capable of being made so. Moreover, Morris has compared ligation of the appendix to ligation of the end of the colon after lateral anastomosis. They are structurally similar, and what would be unsafe in one would be unsound in the other. Approximation of the serous coats in both is the logical procedure. Subsequent perforation after simple ligation occurred sufficiently often to cause abandonment of that method. The custom of inverting the stump into the *caput coli* superseded the original crude device of dropping the pedicle. This has also many modifications, and is the accepted way of disposing of the stump. It was characterized by Price, early in the history of its adoption, as "the good way." It is practised in varying completeness, from simple invagination into the cæcum, to the elaborate technique of Van Hook, which consists in amputating the appendix between a temporary ligature around the base of the appendix and artery forceps, distally. The stump is cauterized with carbolic acid, a row of Lembert sutures is passed from side to side, the temporary ligature of the appendix being removed before the sutures which invaginate the appendix are tied.

Dawbarn introduced the neat and efficient purse-string suture. It encircles the base of the appendix within a radius of a quarter of an inch, passing through the serous and muscular coats of the cæcum. The appendix is cut away about half an inch from its junction, stretched with small forceps, which push it into the intestine and are withdrawn as the suture

is tightened around the vanishing stump. The acme of refinement in appendix surgery was reached when the method of section through the peritoneal coat, excision of mucous membrane, and suture of opposing serous and muscular coats came into vogue. This method may or may not be combined with invagination. Personal modifications of this plan have given the brilliant results of Murphy and Morris, and in the hands of the expert leave nothing to be desired.

The cautery method minimizes the danger of infection from the stump, and is the one which McBurney commonly employs. The appendix, after its detachment from its mesentery, is amputated a quarter of an inch from its base. The edge is held up with forceps, a probe passed through the opening of the stump to the colon, to test its permeability, and a fine Paquelin cautery point inserted into the lumen of the stump. The ligature is then applied around this cauterized area, the ragged edge trimmed and freshly cauterized.

The proverbial untrustworthiness of a thermo-cautery has ever been the *bête noir* of the practical surgeon, and any method which includes its employment is not congenial.

Some of the failures from inversion of the stump, which caused consecutive perforation, fecal fistula, and sometimes death, in operations of otherwise favorable import, were due to a stricture-dam between the ligature and proximal opening of the appendix. This condition manifestly duplicates the essential condition for a continuance of all the possibilities for evil of the original attack. The operation was imperfect —a mere resection of the disease, leaving the actual and active causal factor uncancelled. These facts have led McBurney to test the patency of the lumen of the stump with a fine probe after amputation and before ligature and closure. When leaving a stump this should invariably be done.

The ideal of all surgery is completeness, and applied to the surgery of the appendix would suggest total excision of the entire organ. This ideal method has been approached by McBurney in his recommendation to " cut away the appendix very close to the colon, and that portion of the wall of the

colon which includes the orifice be depressed with a probe, and the edges of the furrow thus made sutured with a double row of fine catgut or silk."

In spontaneous amputation of the appendix by necrosis near its base, I have seen this method practised in the case of a colleague with success. The efficiency of peritoneal suture of gunshot or stab wounds of the intestines has, no doubt, suggested to many surgeons a similar closure of the orifice in the cæcum left after complete excision of the appendix. It has remained for Deaver to practise this method as a routine in suitable cases, and in its more general adoption I believe will consist the last step in the evolution of the treatment of the stump.

The technique, as employed by Deaver, is as follows: After freeing the appendix from adhesions and meso-appendix, the cæcum is stripped of its contents and grasped between the fingers and thumb of the left hand; the appendix, being held up with forceps by an assistant, is cut off flush with the colon. The rent at the site of its former junction is united by continuous Lembert sutures, just as in a gunshot or stab wound of the intestines, while the cæcum is still held securely with the left hand. The sutures may be disposed in two layers, the first uniting the edges of the wound, the second approximating the peritoneal covering of the cæcum over it.

This method, aside from its completeness, is particularly useful when the appendix is densely adherent throughout its length. A temporary ligature to the distal side allows of division at its base, and disposal of the proximal end at once. Subsequent detachment of the organ itself from base to apex can be accomplished with great facility. This method is not applicable to all cases. When the cæcum is tied down by adhesions it is impossible to bring it into the incision, which is the essential requisite in preventing the escape of any of its contents, and necessary to the careful suturing of the cut end. Where the appendix has its origin behind the cæcum the carrying out of this technique would expose the patient to the danger of infection. Total excision of the appendix

and closure of the hole in the head of the colon do away with the following dangers:

1. Subsequent perforation of the stump under the ligature from infection in its own cavity.

2. Abscess of the wall of the cæcum from invagination of an infected stump.

3. Continuance of the infectious process from a stricture dam in the stump between distal ligature and proximal opening of appendix into cæcum.

4. Imperfect invagination with incomplete drainage of the stump, on account of cæcal wall being thickened and stiffened with inflammatory exudate.

5. Infection in base of appendix, not apparent microscopically.

I have employed this method in five cases in the last few months, with entire satisfaction.

Case I.—Mr. A. S., salesman. Stricken with acute pain Saturday morning, February 15, 1897. Sunday noon I saw him, with Prof. W. E. McCampbell. Pulse 120; temperature 100°. Rigidity of right abdominal wall; great tenderness. Operation within the hour disclosed partial sloughing of the appendix at the base. It was encased in a layer of lymph that could be stripped off like an umbrella case. The remaining attachment to colon was severed, and the edges trimmed and united by two rows of Lembert sutures. Gauze drainage. Recovery.

Case II.—J. L., aged nine years; woke with pain in right iliac fossa. Vomiting; diarrhœa. Household remedies for colic. Next afternoon he was seen by Dr. T. P. Crutcher. Temperature and slight tenderness continued. Third day noticed pain in right iliac region on attempting to run out to see a passing fire-engine. Fifth day, brought to my office. Pulse 120; temperature 102°. Pain at McBurney's point marked. Limped and inclined to right side on walking. Operation advised. Morning of operation, on sixth day, temperature 99°; pulse 88. Pressure in opposite flank occasioned pain in appendiceal region. McBurney's criss-cross

incision. Appendix ulcerated through in centre and enclosed in small pocket of sero-pus. Gauze protective pads applied. Appendix amputated between ligatures below perforation. Meso-appendix ligated with silk; stump excised; cæcum closed; Lembert sutures; Morris gauze in gutta-percha drainage-wick at lower angle. Incision closed in layers with chromicized catgut. Recovery unnoteworthy, save for tardy closing of drainage sinus. Silk ligature discharged through small persisting sinus seven weeks after operation; rapid healing ensued.

Case III.—J. D., Barton, Texas, physician, aged forty-two years. First attack twelve years ago; four attacks since, the last one two months before operation. Three or four days before the operation had another attack, which reached its acme just prior to operation. Temperature ranged between 102° and 103°; pulse 114 to 120. He had noticeable tenderness since the first attack, greatly aggravated in the last attack.

I had the pleasure of assisting Prof. Paul F. Eve in the operation, August, 1897. Through long incision a large mass was found in the iliac fossa, which enclosed an abscess-cavity ruptured during manipulation. Adhesions were separated and appendix as large as a little finger was isolated. Amputated at junction with colon, and resulting rent closed. Gauze drainage; through-and-through suture. Uneventful recovery.

Case IV.—Mrs. R., aged twenty-two years. Tenderness in appendix region discovered during pelvic examination, during treatment for movable retroversion. Advised rest and composure. She was seized with nausea on the way home, and sat down on the pavement and vomited. Two hours afterward tenderness more marked, nausea continuing. Pulse 68; temperature 99.3°. Mercurials, followed by salines, next morning, at which time pulse was 66, and temperature 100°. In consultation Dr. McCampbell related a mild attack in February, 1897. Operation performed twenty-six hours after onset of symptoms, July, 1897. McBurney incision. Appendix was thickened, stiffened, angry, and adherent at tip. Amputated at base; Lembert closure of cæcal opening. Layer

approximation of incision. Highest pulse 76. Never required purgative. Union without redness. Sat up on eleventh day. Discharged within two weeks.

Case V.—J. R. P., aged twenty-eight; travelling man. Mild attack February, 1897. Not confined to bed. Could not ride in a buggy without painful jarring of "sore spot" in right iliac region. Numerous slight attacks since. October 23, 1897, after a hunt, had a chill, followed by fever, and attended with old pain in right side. Third night pain prevented sleep. He was having high temperature meanwhile; the fourth night it reached 102°, following the chill in the afternoon; pulse 90. History of daily chills and fever. The appendix could be easily palpated, and was not very tender.

Diagnosis: Malaria, with chronic appendicitis. Fifteen grains of quinine six hours before expected chill had no effect. On the fifth night, after chill in the afternoon, temperature rose to 103°; pulse 102. Appendix well marked; slightly more tender. Operation advised. Operation delayed by patient twenty-four hours to summon his family physician, Dr. Curtis, of McKenzie, Tenn. Operation October 30, 1897. Two inch criss-cross incision. Appendix was found thickened, and apex much enlarged. Amputation—exsection; Lembert suture; layer closure; no drainage. Chill first day, followed by a temperature of 103°. Quinine has prevented chills since, but the afternoon temperature ranges between 100° and 101°; pulse 80 to 90. Skin sutures removed on seventh day; perfect union; no tenderness.

DISCUSSION.

Dr. Joseph Eastman, of Indianapolis, Ind.—Mr. President: I have been deeply interested in this paper. It is a study in the right direction. One year ago I became fully aware of the danger that might follow leaving the stump of the appendix. When left it has acted as an infective substance, and in several instances it did great damage. I had opportunity of knowing the results. After I had completely invaginated the stump of

the appendix it sloughed away, and following it a fecal fistula occurred. This awakened me to the fact that if we ligate the meso-appendix, cutting off its artery, quite an area of the cæcum where the appendix originates is deprived of its blood supply. In one case we saw post mortem that considerable ulceration existed in and about the cæcal orifice of the appendix. Since that time I have operated in a very different way, leaving no stump of appendix whatever. After having ligated the meso-appendix and its artery firmly, I seize a portion of the cæcum below the appendix with a small pair of hæmostatic forceps; then with cautery I sever the appendix, carrying out the principles which Keith and Skene follow in burning off the pedicle in cases of ovariotomy, rubbing the cautery upon the forceps until that portion of the cæcum included in the grasp is cooked (desiccated). Then with a series of Lembert sutures, taking up the cæcum over forceps into the cæcum again, later withdrawing the forceps, the portion held between them is firmly united. The advantage of this is we do not open the cæcum or appendix, consequently there can be no possible escape of any bacteria into the peritoneal cavity. You will find the dissected part, pinched up by the forceps, folds nicely under the Lembert sutures. At no time is the cæcum opened. It would seem to me from the method described by the essayist that the cæcum would gape open, but if we sever *nothing* with scissors, but *everything* with cautery, ultimately closing the cæcum by broad sera-serous approximation, we guarantee a better result. I could not be induced to leave a portion of the stump of the appendix under any circumstances, because the little stump not only becomes infected, but the more dangerous infection is within the cæcum, sometimes close to the cæcal origin of the appendix. By taking off one quarter of an inch of the cæcum it has a decided advantage, in that we are able to make a better approximation of the lips of the wound.

Dr. Howard A. Kelly, of Baltimore, Md.—I do not believe it is necessary in all cases to remove every particle of the appendix, and the advantages are only imaginary. Those cases in which there is involvement of the surrounding cæcum are abnormal, and as such must be treated in an exceptional way; in still worse cases we may have to cut off the caput cæci. I operate by ligating and cutting off the appendix close to the cæcum after turning back

a peritoneal cuff; the little mucous end is sterilized with carbolic acid, and the cuff brought over it; then what constitutes the special feature is the burying of the little short stump beneath the peritoneum in the following manner: In cutting through the mesenteriolum we have left a triangular space, with the peritoneum on either side and cellular tissue at the base. We catch up the peritoneum on either side and the stump in a single suture, and tie it, drawing the stump in, and, closing the space, sew it. The condition of the appendix is an important query in all surgical operations on the abdomen, particularly so to the gynecologist, every time he opens the abdomen. I have my anæsthetizer fill out a list on which he notes the amount of anæsthetic used, and he asks me before operation is concluded what is the condition of the appendix, and notes it, to be filed with the history. And so, in the course of a thousand cases, we will get a fair idea of the percentage of frequency of appendical diseases, which are quite frequent complications in gynecological ailments.

Dr. J. Wesley Bovée, of Washington, D. C.—As Dr. Kelly says, a diseased condition of the vermiform appendix is a very common thing in gynecological ailments or in pelvic suppurations. The plan I follow in removal of the appendix and closing the stump, where I take nothing away but the appendix, is to insert a fine silk or catgut suture along two opposite sides of the cæcum close to the appendix, drawing the suture in and out through the peritoneal coat, then a circular amputation (in this case it amounts to complete enucleation) of the appendix is made. I simply draw the two sutures together and tie each end, being sure to invert the flap. By putting the suture back a little it usually inverts the edges of the peritoneal covering nicely, and brings it up very quickly, so that the opening of the appendix is exposed but a short time. It is a clean, rapid, and safe method of disposing of the stump.

Dr. J. R. Weist, of Richmond, Ind.—I am not prepared to say that I always indorse the poetic sentiment that "age gives us mystical lore, and coming events cast their shadows before." But I have arrived at an age when I am convinced that it is well to consider conservative questions in surgery, and I believe I see indications that the future surgeon will not be so radical in his work as many of us are to-day. If I rightly understand the brilliant and scholarly paper just read, the author indorses the belief that all

cases of appendicitis demand surgical interference. I only rise to record my protestation against this doctrine. I recognize the truth of the statement made in the paper, that if a hundred cases are operated upon as soon as evidences of disease present themselves, a larger number will recover than will in a hundred cases not operated upon. A large number of the cases are not seen early; therefore, this fact does not establish a rule of practice.

The statements of some surgeons lead to the conclusion that all cases of appendicitis operated upon at an early stage recover. This is not my own experience, and my observation tells me that it is not the experience of others. I believe the operation a proper one in selected cases, one that will save many lives, and I only rise to protest against the doctrine that every case of appendicitis demands a surgical procedure.

Dr. Haggard (closing the discussion).—I am very highly pleased at the reception of my paper. The discussion has been interesting to me personally, as it has added the methods of disposal of the stump practised by those who described them to the methods compiled in this paper. When I began to investigate the methods of disposing of the stump it brought out what has been shown here to-day, that every operator is a law unto himself; he has his own peculiar ways of doing things, which in his hands are good, and which it is very difficult to duplicate. I believe, however, that the total excision of the appendix is the best method for all that we can possibly adopt, for the reasons I have given, and to repeat, I think that with the method I described of pinching the head of the colon, clipping the appendix off close to the bowel, it is a matter of great simplicity to cover the rent over by suture. Of all methods of disposing of the stump, that by complete excision is the simplest and safest.

I must apologize for introducing any ultra-radical views on operative indications in this disease, and I am of the opinion that the silence of the Fellows generally on that phase of the subject might be construed in the support of an opinion of which I have simply given expression, namely, that while it cannot always be done, I do believe that if every case of a hundred was operated upon as soon as a diagnosis was made, we would get far more recoveries than by taking a hundred cases that were treated medically, or operated when it seemed necessary, or not treated at all.

This is the only light by which our future in surgery can be guided.

In reference to the unfortunate statistics quoted, if I had had such bad results myself I should have said it was most villanous surgery or that the cases were so desperate and had been delayed so long that operation would do no good. This leads me to conclude that in the hands of good surgeons, if these six cases had been operated upon as soon as a diagnosis was made, they might all be alive and well to-day.

FOUR CASES OF ABSCESS OF THE UTERUS,

TREATED BY INCISION, CURETTEMENT, STERILIZATION WITH CARBOLIC ACID, AND DRAINAGE.

By George H. Noble, M.D.,
Atlanta, Ga.

The ready manner in which the peritoneum takes care of abscess-pockets and pus-covered surfaces (so-called pyogenic membrane) when properly cleansed and drained, is a familiar observation to the abdominal surgeon—notably in deep pelvic surgery. This is true when the external or peritoneal surface of the uterus is implicated.

If, then, this organ is not necessarily sacrificed when superficially involved, should it be excised in selected cases when a thin wall or septum of tissue between the pus and pelvic cavity constitutes the only difference? This is a question that presented itself when I was unexpectedly confronted with a case of this kind. It seemed to me that such purulent collections, when converted into a condition similar to pelvic abscess, should meet with the same results. Therefore the treatment of abscess of the uterus upon the fixed or established principles applied to other parts of the body was employed in the instances here presented, making exceptions to nothing but the character and extent of the inflammation affecting the uterus.

They occurred in my hospital practice within the last two years, and will be briefly reported, the object being to call your attention to the subject.

1. The first case was of puerperal origin, the operation occurring at the end of the second week. There was a pus-tube

and abscess of ovary in the left side. The appendages on the right side were normal. After separating the adhesions, which were rather extensive for unilateral disease, an abscess of the fundus uteri, about the size of a small lemon, was discovered. It was incised, curetted, and cauterized with carbolic acid. The cavity extended from the median line to the stump of the appendages on the left, which was turned into it and fastened with sutures to prevent the formation of a dead space. A glass drain was dropped into Douglas' pouch after flushing the abdominal cavity.

This woman made an uneventful recovery. The previously high temperature ($104\frac{2}{5}°$) and rapid pulse showed marked improvement from the time of the operation. She has been well two years, without any pelvic disturbance.

2. The second case was also operated upon at the end of the second week after confinement. The appendages were normal, excepting a marked injection. An abscess the size of an English walnut was situated upon the posterior uterine surface at the fundus, with a smaller one, about half its size, a little below and to the left.

The appendages being free from septic inflammation, an attempt was made to save the uterus by incision, curettement, and swabbing of the abscesses with carbolic acid and glass drainage-tube. (In this way I hoped to avoid a more or less prolonged operation.) It became necessary, however, to pass a mattress suture through the outer wall of the larger abscess on either side of the incision, then out through the uterine wall at the margin of the indurated area, for the purpose of depressing the outer abscess-walls to prevent the formation of a dead space. In this way a little time was lost, but it was trifling when compared with the time consumed in extirpation of the uterus. Though she was anæmic and very septic (pulse 120, temperature $103\frac{4}{5}°$) at the time of the operation, she made a very satisfactory recovery. The drainage-tube was removed in thirty-six hours.

3. The third case followed an abortion, and was operated upon the eighteenth day thereafter. The appendages were in

good condition and did not require removal. The uterus was indurated on its posterior surface. Other parts of the organ were apparently healthy. The indurated surface was punctured over the points of the greatest elevation, and two deeper-seated abscesses were in this way discovered. The larger one, about the size of a hickory-nut, was situated in the median line near the fundus. The other abscess, a little smaller, was located on the right side and a little below the larger one. They were incised, curetted, and cauterized with carbolic acid, and drained with glass drain in Douglas' pouch.

This woman was in a better condition than either of the other cases, and had not suffered much from septic absorption. The operation would not have been done but for the fact that thorough cleansing of the uterus gave no relief, and that the induration on the posterior wall of the uterus caused a suspicion of abscess. Her recovery was prompt and satisfactory.

4. The fourth case occurred in my service last July. There was a pyosalpinx and abscess of the ovary on the left side, with very extensive exudate. The uterus and right side of the pelvis were free. The abscess was a little less than an English walnut in size, and situated slightly to the right of the median line on the posterior portion of the fundus uteri. It was incised, curetted, cauterized with carbolic acid, and drain dropped in Douglas' pouch. Drainage removed in twenty-four hours. Recovery good.

These four cases show what nature will sometimes do for the septic uterus when given a chance. They also support the view that it is not always necessary to extirpate the womb in suppurative inflammation of its parenchyma, and that such operations should be confined more closely to cases in which the uterus is thoroughly septic or riddled with abscesses. The latter are rare, fortunately, for they do not stand operations well. They also show that infection of the puerperal uterus does not necessarily mean that the entire organ is hopelessly contaminated, but that intense foci may be circumscribed by nature and relieved without hysterectomy.

The diagnosis is chiefly by exclusion, therefore uncertain without recourse to abdominal section. It was by this means that the cases above reported were discovered.

If the external os (uteri) has contracted normally and there is little or no discharge from the same, it is reasonably certain that the uterine cavity is free; but go further and examine the appendages. If they are healthy, palpate the body of the uterus. If roughened or nodular—which is not *easily* felt through the abdomen unless the case is hopelessly involved, or the uterus studded with multiple abscesses—abscess is likely present. These nodular points must be differentiated from small fibroid tumors, which are much harder and stand out more prominently from the peritoneal surface.

If in doubt, dilate and explore the uterine cavity with the finger and curette. If the results are negative, septic inflammation from that source is excluded. If the appendages and peritoneum are free, they also are excluded. Therefore, an accelerated pulse, elevated temperature, chills, etc., following abortion or parturition, indicate abscess under the above-mentioned conditions and demand abdominal section, whether there are any physical signs to support the diagnosis or not.

If the uterus is much too large for the period of the puerperium in which it is found, involution has been checked, and the greater the interference and accompanying metritis the graver is the disease and more numerous the abscesses. Upon the other hand, if the uterus is small and firm, with the other conditions present, the abscesses will be small, limited in number, and circumscribed with a barrier of lymph.

Sapræmic infection, associated with sepsis or mixed infection, would not likely set up single abscess, but a precipitate course is likely to follow—either a saturation by preformed ptomaïnes, or an overwhelming dosage of septic infection (pus-producing) setting up a violent metritis—filling the uterus with abscesses.

These are not to be treated by drainage; a death certificate is most frequently in demand, for they die under the expect-

ant treatment, and die more promptly under hysterectomy, with few exceptions.

It is therefore emphasized that cases should be selected for treatment by incison and drainage, for if the entire uterus is septic or abscesses multiple such measures are useless.

As their location is usually at the fundus uteri, the shortest and most direct route to the exterior of the abdomen is above the pubic bone. By this route we avoid contamination of the tube-tract and its resulting sinus. The tube can be removed early and the aperture closed.

Drainage "below the brim" will very likely be more prolonged on account of infection from imperfect sterilization of the vagina.

The number of cases so far are insufficient to fix the best methods of detail regarding drainage and avoidance of dead spaces.

In small abscesses, evacuation, with thorough scraping, sterilizing, and drainage, as here practised, is all that is required. The drainage may, perhaps, be just as effectually done in some other way, but the principle is the same. There is only a small quantity of pus to contend with, and that is removed by the operation. The drainage is, therefore, designed for the purpose of enabling the peritoneum to cut off and surround the abscess-pocket with a protective wall of lymph or agglutination of omentum, intestines, etc.

In larger cavities it is, perhaps, safer to remove the outer wall of the pus-cavity, thereby converting it into a simple depression or excavation, which would possess none of the dangers of a dead space.

In the foregoing cases one was treated by stitching-in or depressing the outer wall; but in case of defective sterilization, the sutures are liable to become infected; therefore, in a series of cases it is less likely to meet with success than excision as here described.

At the time this case was done this feature had not occurred to me, for, not being aware that a case of this kind had to be dealt with, it had received no study or thought on my part.

If excision would destroy much uterine tissue, direct drainage of the pus-cavity may be practised, either with gauze or tube, with a view of allowing it to fill up by granulation. This, perhaps, would meet with the approval of those who do not like to rely upon the protective powers of the peritoneum.

Flushing of the pelvic or abdominal cavity should be resorted to as in ordinary conditions—that is, when sponging will not effectually cleanse the same.

DISCUSSION.

Dr. A. M. Cartledge.—I do not know how the rest of the Fellows are impressed with this short paper, but personally I only wish it was longer. It is a remarkable contribution, and I have listened to it with a great deal of interest. After noticing the title of the paper on the programme, I was anxious to see how the author would deal with these abscesses. Formerly the accepted opinion was that the appendages were most usually involved in cases of puerperal infection; this was a mistake. The uterus in the majority of cases is the point of especial infection, and the process remains confined to this organ. At our meeting in Washington I exhibited two specimens from cases of hysterectomy performed for puerperal sepsis, beautifully illustrating this proposition. One uterus, as large as two fists, had twenty small abscesses in it, as described by Dr. Noble, and the other some eight or ten. They were subperitoneal. It never occurred to me at that time that these abscesses could be treated in any other way than by hysterectomy, so that the paper to-day is one in the line of advanced conservatism. The recovery of four women with systemic infection after such a method of treatment shows the wonderful power of the peritoneum, if drained below, in taking care of a violent form of sepsis. The doctor's paper is extremely valuable, and bears out what I am sure is true, that the infection is in the majority of cases truly uterine rather than in the appendages. If I rightly understood Dr. Noble, there was only one case in which the appendages were affected.

Dr. Noble.—Two.

Dr. Cartledge.—The uterus being the especial point of infection, the question arises, if these abscesses were large and at

all numerous, and incised in the manner described, what would be the functional condition of the uterus after such a method of treatment? Certainly, if there were one or two abscesses, the method of treatment must be considered in the line of splendid conservatism, and the results are better than those after hysterectomy for infected uterus following childbirth or abortion. These cases were bad ones, and would give from 20 to 50 per cent. mortality from hysterectomy. This class of cases died under former methods of treatment.

Dr. J. Wesley Bovée, of Washington, D. C.—It seems to me, and I think the evidence bears out the idea, that the most dangerous cases of puerperal sepsis are not accompanied by the formation of pus; that the disease spreads from the uterus through the lymphatics or the veins, and I have seen the veins distended by large coagula containing the streptococcus in the broad ligament, running on up above the broad ligament. The disease is probably not conveyed so frequently through the Fallopian tubes as it is through the veins and lymphatics. I have found ovarian abscesses without pus or any evidences of inflammation in the Fallopian tubes in these cases. I have found such condition in abdominal section after labor. Now, when we have these abscesses in the uterus, spreading in this way, it is just as plausible to let the pus out of them as to do the same operation in an abscess in any other portion of the body. This is certainly a well-known rule in surgery, and if we can do this without danger of infecting the peritoneal cavity it is the proper thing to do. I have pursued this course in only one case, in which I resected the uterus from above, where the abscess was formed and burrowing through the peritoneum, and cut out the side of the uterus near to the internal os. I am very much pleased with the advanced position Dr. Noble has taken in this matter. We have to fear, however, jeopardizing the future usefulness of this organ. It is not so much the destruction of the tissue and the formation of these abscesses, but the resulting cicatricial contraction and connective-tissue formation will interfere with the function of the uterus in labor. It will, perhaps, tend to produce rupture of the uterus. At the same time, I do not think this point is of sufficient importance to justify us in not following out a conservative procedure such as this, if it proves as successful as it has in these cases.

Hysterectomy in puerperal sepsis, if done early, may prove of some value. It is to be done before there is general infection, before the disease has spread from the uterus into the broad ligaments, and perhaps further than that. We may make a mistake in diagnosis, and the operation may not prove successful. The statistics of vaginal or abdominal hysterectomy in puerperal sepsis will give a mortality of more than one-half of the cases operated on.

Dr. T. J. Crofford, of Memphis, Tenn.—I would like to ask a question or two of the doctor in regard to the early history of these cases. Did they follow abortion or labor at full term?

Dr. Noble.—Two followed labor at full term, the other one at five, and still the other at five and a half months.

Dr. Crofford.—Did you believe that the infection was of intra-uterine origin?

Dr. Noble.—I could not determine that question positively at the start.

Dr. Crofford.—Following out the line of conservatism which is beautifully shown in the paper, I have had considerable experience in dealing with this class of cases, and I will say that if the cervix is kept dilated, not allowed to close, and the uterus is freed of everything with the curette (and I am one of those who believe in the sharp curette in these cases, notwithstanding we may possibly extend the disease in some cases by its use), a cure may be effected. Where we have reason to believe there is an abscess of the wall coming from the mucous membrane inside of the uterus, if we will cleanse the uterus thoroughly and pack it with gauze we will open these abscesses in the inside and still pursue a more conservative course. This is not in the way of criticism of the paper, because the doctor may not have gotten his cases early enough. I do not wish to be understood as criticising the course pursued by him, because I do not know how early he got them. If these cases are treated in this manner I have never known one of them to die. Occasionally a death occurs in spite of this treatment, but I have never known them to do other than get well when the cervix is kept open and the uterus packed with gauze. It may cause these abscesses to open through the endometrium and may relieve the condition in this manner.

Dr. Richard Douglas, of Nashville, Tenn.—I think it de-

pends somewhat upon the particular germ-infection that is producing the trouble. As is well known, in streptococcus infection it is not the tendency of the inflammation to be circumscribed. It is diffuse. In these cases we are not likely to have a local area of suppuration, but in other forms of infection we may have it. Furthermore, it is well known that in suppurative metritis there are multiple areas of suppuration, many hundred or more. Some of you will remember the beautiful specimen that was exhibited at Washington by Dr. Cartledge, illustrating this pathology. I do not know how many centres of infection there were, but certainly those abscesses could not have been opened and drained through the cul-de-sac of Douglas.

Furthermore, I would say that where we have interstitial suppuration the pus burrows along the planes of the muscle, and thorough curettement would not relieve these cases. In treating cases of infection following abortion or full-term labor I have used what is known as the Carossa method with decided benefit. After thorough dilatation of the uterus and cleansing of its cavity, a soft catheter is introduced up to the fundus, then the uterus is very lightly packed with gauze, and a short rubber tube connected with the catheter, the gauze being kept saturated with a 25 per cent. solution of alcohol. My attention was called to this method in a paper by Dr. Ill, of Newark, N. J., who had treated four cases, all recovering rapidly.

Dr. W. E. B. Davis, of Birmingham, Ala.—The point has been very well made that the very fact that these abscesses occur would indicate that there has not been the most dangerous form of infection. If abscesses follow an abortion or delivery at full term they can be cured by incision and drainage in a good proportion of cases, whether confined to the uterus or to the structures around the uterus. We know that many cases of pelvic abscess following the puerperal state recovered before pelvic surgery was practised, and that these women bore children afterward. It was by the process of rupture and drainage, a process which would not be permitted now. However, by incision and drainage these cases can be relieved.

It is very rare to find abscesses confined to the uterine wall, and the author's cases will attract attention. I do not think it advisable to make abdominal section for these cases as was practised by the author, but would recommend that the uterus be

curetted thoroughly, with the view of draining the abscesses intra-uterine, and would add to this a free vaginal incision behind the uterus, so as to reach the extra-uterine trouble and to be able to more thoroughly examine and deal with the uterus. An abscess of the uterus could be incised and drained through the vaginal incision with less danger to the patient than by abdominal section. I recall a case that I curetted recently, in which I made a considerable rent through the uterus. There was a peritubal abscess and the curettement was done preliminary to a vaginal section. After opening from behind I packed gauze around the uterus, and the patient made an uninterrupted recovery. I would not advise the closing of the uterine wound, as was practised by the author, but would recommend that it be left open so that drainage may be free. Vaginal section is to be preferred in puerperal cases, not only for uterine but for peritubal abscesses.

Dr. J. G. Earnest, of Atlanta, Ga.—Where there exists doubt in regard to the procedure to be adopted, it seems justifiable to follow the method of Dr. Noble, so far, at least, as to make an exploratory incision, which is now recognized as not attended with any danger of consequence, and in that way ascertain whether the patient is a fit subject for the method of treatment suggested by the essayist. In the event the case should turn out not to be suitable for this operation, there has been very little damage done by the simple exploratory operation.

Dr. R. M. Cunningham, of Birmingham, Ala.—It strikes me that the doctor in his paper brings out three points not usually accepted by pathologists. First, disregard of the endometrium as a source of infection. Second, the absence in 50 per cent. of the cases of inflammation of the uterine appendages. Third, the cases are made aseptic, treated by incision and drainage, so that they get well without any subsequent operation. In general surgery it is difficult by curettement and cauterization to destroy the staphylococcus, and much more so the streptococcus, which has extended, perhaps, beyond the walls of the abscesses, and continues its infecting and peptonizing influence. To get primary union in an abscess after curetting and disinfecting is very hard in general surgery. Another point suggested by the paper is whether it is better to do vaginal or abdominal hysterectomy in these cases. A few days ago I asked Dr. Sherwood-Dunn the question of what he would do in cases of puerperal infection

where the pus was in the connective tissue. Of course, perhaps, there are some members of this society who think that there is no such thing as a pelvic abscess in the connective tissue, that it is intraperitoneal. But there are those who differ from them in this opinion. It is in these cases that the uterus should be removed, because many of the abscesses are intramural. This was the opinion given by Dr. Dunn.

With reference to the point made by Dr. Bovée in regard to infection, I believe that arrested pathogenic germs result always in suppuration, unless they are destroyed by the white blood-corpuscles. I believe the cases of infection that die without suppuration are really saprophytic in character. I believe we have the absorption of putrid material, and so we have two varieties of infection: the first, which is common in midwifery practice and does not result seriously, and, second, very fatal sapræmia, from the absorption of putrid material, which results fatally.

I consider the doctor's paper an excellent one, because it is in the line of conservatism, and I believe it is a demonstration that the one idea of going above the pubes is the proper way of investigating and dealing with these cases.

Dr. Noble (closing the discussion).—I thank the gentlemen for their kind expressions and for the interest they have taken in my paper. It was not my intention to go into such a broad field as septic infection, or septic inflammation of the uterus in general, but to deal only with uterine abscesses.

Dr. Cartledge emphasized a point which I hope will be recognized in the study of the pathology of this disease, viz., that the uterus is, in a certain percentage of cases, the primary point of the infection, and not the appendages. There may be, therefore, circumscribed areas of infection, corresponding usually to the placental site, while a greater part of the uterus may remain free from the disease. It is in this class of cases, and not sapræmia (preformed ptomaïnes), that this method of treatment is recommended. It is applicable when there are a limited number of abscesses—one or two, or perhaps three—but in such cases as those of Dr. Cartledge, specimens of which were presented at the Washington meeting of this Association, nothing short of hysterectomy would have been of any service whatever, because they could not have been drained successfully.

Dr. Douglas spoke of a tendency on the part of the pus to

burrow between the layers of the muscles. Nearly all of the abscesses of this kind that have come under my observation were situated between the middle and external layers of the muscles, and no tendency to burrow in this manner was observed. The surrounding barrier of lymph seemed to be as dense between the layers as at any other point. The pus, therefore, burrowed in the direction of the least resistance—that is, toward the peritoneum.

Dr. Crofford spoke of packing the uterus with gauze, with a view to evacuating the contents of the abscess through the uterine cavity. I must say that I cannot approve of such a method, because the abscesses, so far as my observation goes, are nearly all situated close to the peritoneum. I am quite sure in none of these cases could we have exerted pressure enough in the cavity of the uterus, to encourage evacuation by such means without seriously jeopardizing the safety of the patient. It is possible that submucous abscesses, if such things occur, might be evacuated in that way.

I thank Dr. Bovée for the case he reported, but can assure him that there is no more liability of rupture of the uterus in pregnancy or parturition than in cases upon which myomectomy or the Cæsarean section has been done. The scars from these operations have not proved serious. Small abscesses of the uterus seem not to destroy the muscular structure to any great extent, but to push the fibres aside, and consequently cicatricial structures following them are not likely to produce very weak spots in the uterine wall.

Dr. Cunningham appears to be in doubt as to sterilizing abscess cavities sufficiently to secure good results. Evidently he is not an abdominal surgeon, for those who do much abdominal work are familiar with the manner in which the peritoneum takes care of pus-covered surfaces when they are well cleansed and drained.

Lastly, I have only reported four cases by this method, and what the results in the future will be I cannot say. It may be that after we have dealt with a larger number of cases the results may not be so good. In fact, some cases must die; we cannot save them all. This number is too small to draw any very definite conclusions from, except that the method is practicable; and I present it with the hope that it may interest you and that some one may make something of it.

A STUDY OF RETROPERITONEAL NEOPLASMS, WITH SPECIAL REFERENCE TO DIAGNOSIS.

By Richard Douglas, M.D.,
Nashville, Tenn.

Definition. For the purpose of my paper I accept the limitation suggested by Mr. Lockwood for retroperitoneal neoplasm. The term implies a solid or cystic tumor growing behind the peritoneum into its folds and not connected with any of the great retroperitoneal organs. So we at once eliminate from our consideration tumors of the kidneys, pancreas, uterus, and so-called broad ligament ovarian cysts. Neoplasms connected with any of the retroperitoneal viscera usually present sufficient evidence in their history, symptoms, and physical signs to enable us to ascribe their site of origin.

Origin. Surgeons are not very careful in determining at the time of operation the true origin of the tumor with which they are dealing. The spirit of the pathologist is for the time eclipsed by the surgical emergencies. Therefore, I feel very safe in assuming that many retroperitoneal neoplasms have been met with ; the surgeon, recognizing the inoperable character of the case, or awed by the apparent insurmountable difficulties, abandons the attack and consigns the patient and the diagnosis to oblivion. The structures involved primarily in these growths are the retroperitoneal, cellular, and fascial tissue, retroperitoneal glands, mesenteric glands, the sheaths of the great bloodvessels, and the vertebra.

Pathology. The type of tumor usually encountered in the retroperitoneal space belongs to the connective-tissue group. A careful study of these cases shows that they are

of a mixed variety, the predominating type being sarcoma and lipoma ; occasionally fibroma and myxoma are met with. An analysis of the twenty cases of solid retroperitoneal tumors collected by Rogowski showed sarcomatous tissue in every one.

The peculiarity of retroperitoneal sarcomata is that they are encapsulated. According to Mr. Cripps, they do not recur when removed. From a careful investigation of the literature on this subject, I think the speaker was very safe in making this assertion, inasmuch as about 95 per cent. of the patients die from the operation or before it.

The predominating microscopical picture is generally of the spindle-cell sarcoma, yet in literature we meet with such descriptive terms as myxosarcoma, liposarcoma, fibrocystic sarcoma, etc. Metastasis occurs in about one-half the cases ; the liver, lungs, and mesenteric glands are the parts involved.

Frequency. There seems to be a general understanding among surgeons that these tumors are so rare that they are scarcely worth special study, and this is borne out somewhat by the following statement from Mr. Lockwood, who says that no specimen of retroperitoneal sarcoma has been exhibited in the Obstetrical and Pathological Society of London, and prior to 1895 the Medical Society of London had no opportunity of discussing this peculiar pathology ; yet in 1889 Rogowski was able to collect twenty cases. In a recent discussion in the Royal Medical and Chirurgical Society of London, Mr. Shield reports a very instructive case of retroperitoneal sarcoma, and from the limited discussion that it elicited one would infer that the members were quite unfamiliar with the subject.

Age. They occur after maturity, from twenty-eight to fifty-nine years. Mudd's patient, the oldest on record, was seventy-one years old. In one case, reported by Joseph Austein, the patient was a female, aged four years.

Sex. These growths occur alike in both sexes.

Duration. Duration of life-history of retroperitoneal tumors is usually about six months, though some cases have

lasted for years; but usually, when the tumor has existed for so long a time, the original growth was some form of typical neoplasm, the sarcomatous change being engrafted upon it; thus, in Waldeyer's case, in which the tumor weighed sixty-three pounds, there was some history of abdominal tumor for several years before the microscopical examination showed it to be a lipo-myxo-sarcoma.

Causation. There is no recognized cause for these growths, yet in some cases the malignant growth appears as secondary to some local injury or suppuration. Rogowski reports a case of Neumann's in which tubercular abscesses occurred some ten years before the appearance of a sarcomatous tumor at the site of suppuration. There has been some effort to assign these growths to specific cause, yet we would scarcely expect a gumma in the loose retroperitoneal tissue without its occurrence in other organs.

Diagnosis. The difficulty that surrounds the differential diagnosis of abdominal swellings is notorious, and a solid growth that cannot be attributed to any of the great organs should, at least, arouse suspicion. Clearly it is of the greatest importance that we should learn to diagnose these retroperitoneal tumors before they have seriously affected the health of the patient, acquired such universal attachments, and distorted the abdominal viscera. And it appears that the diagnosis would be much easier in the early stage if the investigation were made under anæsthesia.

Retroperitoneal tumors possess certain well-marked characteristics not found in primary intra-abdominal neoplasms. The latter originate primarily between the duplications of the peritoneum, are attached to the organs from which they spring, and have their attachment between the intestines and pelvic cavity, while retroperitoneal tumors "originate in the retroperitoneal space, and as they develop they encroach upon the peritoneal cavity and push the organs contained therein either forward or to the side in a most typical manner." (Witzel.)

General Condition. A patient bearing a retroperito-

neal tumor exhibits a pronounced constitutional disturbance. The usual large size of the tumor and its location give rise to disturbances of the digestion and respiration. The kidneys are frequently displaced and compressed by the growth, the spleen is entangled in the mass, and the bloodvessels and lymphatics of the digestive tract are partially obstructed. Consequently these patients are usually emaciated, suffer from intermittent diarrhœa, and not infrequently with nausea and vomiting, and gradually a pronounced cachexia is developed.

The rapidity of the growth, which usually does not extend over a period of a year, frequently a much shorter time, develops this condition more rapidly than in ordinary intra-abdominal tumors.

Morphology. The appearance of the abdomen in these growths is by no means characteristic. They grow anteriorly, as Vander Veer says, in the direction of least resistance, yet the size and location have much to do with the morphology.

In Mudd's interesting case the abdomen was exceedingly pendulous, the tumor resting on the patient's thighs. In other cases the contour of the abdomen is very striking, the tumor causing great swelling in the upper portion, and bulging out but little in the side or below the umbilicus.

In the interesting case reported by Terrier and Guillemain of lipoma, this characteristic appearance of the abdomen was exceedingly striking. These tumors are generally asymmetrical, and frequently extend into the pelvis, in one instance producing complete uterine prolapse. The direction of the growth of the tumor of course alters the appearance.

The superficial veins of the abdomen are usually very much enlarged, a fact easily accounted for, both by the pressure of the tumor upon the vena cava, which frequently occurs, and by the distortion of the mesenteric veins, due to displacement of the viscera.

Contrary to what one would suppose, these tumors are sometimes decidedly influenced by respiration. In Ransohoff's case, a very large tumor which lay chiefly on the right side

was intimately connected with the liver and moved distinctly with each respiration. This phenomenon was evidently confusing to the surgeon. As a general rule, however, these tumors are not influenced by respiration.

PALPATION. These tumors, whether lipoma or sarcoma, do not give upon palpation the elasticity or fluctuation observed in a liquid tumor, and certainly not that hardness observed in ordinary uterine fibroma. Lipomatous tumors, particularly, impart upon palpation a special feeling which may be likened to that of the liver. (Terrier and Guillemain.)

Tumors that grow from the root of the mesentery and develop between its folds are very movable, but those that are attached along the vertebra or in the retroperitoneal spaces of the flanks are fixed.

The surgeon in palpating these tumors must bear in mind that many of these solid growths are undergoing cystic changes, and this alteration sometimes deludes the surgeon, as the tumor does not present a uniform resistance upon manipulation. Again, I would remark that it is a well-known characteristic of lipomatous tumors in any part of the body to impart on palpation a deceptive sense of fluctuation.

In Mudd's, Ransohoff's, and Guillemain's cases of large retroperitoneal lipoma, fluctuation was apparently distinct. This sign, together with the lobulated character of the tumor, is confusing, and more than once has led the operator to mistake it for multilocular ovarian cyst, especially of the type of cyst described by Rokitansky.

PERCUSSION. This is our most reliable method of diagnosticating these tumors. In all retroperitoneal tumors, whether they originate close to the vertebra or to the side, their growth is usually laterally, and in these cases, according to Witzel, the colon bears a most typical and diagnostically important relation to the tumor. At first, while yet the tumor is small, the colon is external, later it is pushed forward and lies in front, and, finally, the tumor attaining great dimensions and still growing laterally, the colon lies central to the tumor. Appre-

ciating this fundamental fact, we can intelligently apply our physical test of percussion.

Barring the relation of the colon, as above expressed, these tumors are usually dull upon percussion; and, unless they are very large and project into the pelvis, there is usually an area of resonance between the tumor and the symphysis. When situated upon the right side their relation and connection with the liver is so intimate as to efface any area of resonance between that organ and the tumor. When large the resonant area is upon the side opposite to the tumor or that part of the abdomen occupied by the displaced intestines. The relation that the colon bears to the tumor can be easily determined by inflation of the gut with gas. Unless this precaution is taken the ordinary pressure applied with a pleximeter or hand in making mediate percussion may yield a dull note. It is interesting to remark that percussion does not always elicit the same note in any individual case. For instance, in the second case reported by Lockwood, immediately after admission to the hospital the tumor was dull upon percussion; it grew rapidly in the next fortnight, and was decidedly resonant. This was explained at the operation, the growth of the tumor being rapid, it extended into the mesentery, separated it widely, and the intestines, which were at first laterally displaced, were now, by the growth of the tumor, elevated and distributed over its surface.

From this clinical observation, so accurately recorded, I would draw the following conclusion, that intra-mesenteric tumors may be resonant upon their upper surface and the dulness marked in the flanks—a condition closely resembling ascites. Furthermore, it is a clinical feature of retroperitoneal growths that the area of resonance varies with the position of the patient. Consequently, it is not surprising that many a dry tapping has been made through a failure to recognize these clinical peculiarities.

While not an advocate for the use of the aspirator in intra-abdominal diagnosis, yet under proper conditions this instrument will reveal valuable evidence, not only as to whether

the growth is solid or cystic, but as to the nature of the growth. In retroperitoneal sarcoma aspiration reveals only a little blood or bloody serum in the needle. This sign was one of the convincing points that enabled Wier and Bull to correctly diagnosticate a case reported by Devlin. In lipoma, on account of the slight vascularity of the growth, no blood is withdrawn. By puncture of ordinary cysts, whether mesenteric, kidney, ovarian, or echinococcal, characteristic fluid will appear in the canula.

Blood in the Urine. In only one case in which the kidney was not involved is there recorded any change in the character of the renal secretions. Usually there is entire absence of blood in the urine in these cases.

There are two special symptoms that occur in the history of postperitoneal growths deserving of mention. First, the occurrence of intestinal obstruction, which has been noted in the history of many cases. Witzel records a case in which volvulus was diagnosticated, but the patient was suddenly relieved. She was pregnant at the time, and after the termination of her labor a large swelling still remained in the abdomen, which reached to the umbilicus. Again symptoms of obstruction came on; operation was attempted, but the tumor was too deeply embedded in the structure of the loin to attempt its removal. Autopsy showed it to be a retroperitoneal sarcoma. While volvulus is mentioned as occurring in many cases, the condition does not usually advance to that stage, there are numerous attacks of partial obstruction, due to intestinal distortion, giving rise to pain, nausea, and vomiting, symptoms relieved as soon as free evacuations are obtained.

The second special symptom that I wish to emphasize is œdema of the extremities. It is a symptom that may occur very early in the history of the growth, is due to pressure on the vena cava, and should materially guide us in making a diagnosis.

While we have attempted to analyze the special symptoms and signs present in retroperitoneal growths, yet we must

admit that there is no one pathognomonic symptom, and a diagnosis must be reached by exclusion.

Complications. The most serious complication attending these retroperitoneal growths, and one that indicates usually peritoneal metastasis or serious obstruction to the circulation, is ascites. This, together with the distention due to distortion or pressure, usually characterizes the closing scene of the case.

Prognosis. The prognosis in lipoma and other forms of innocent or typical tumors is ultimately as grave as in sarcoma. The disturbance of digestion, respiration, circulation, and lymphatics sets up a condition that soon undermines the constitution. The relative benignity of these tumors justifies in all cases an exploratory operation.

In intramesenteric growths of all forms the prognosis is necessarily grave. The injury to the circulation, the devitalization of the peritoneum, and the difficulty attending the enucleation, and oftentimes the necessary resection of the intestine, render the condition an exceedingly grave one.

Retroperitoneal Cysts. A genetic classification of retroperitoneal cysts is more difficult, in view of our very meagre knowledge of the subject, than that of solid neoplasms. Adhering to our original idea of considering only tumors disconnected with the great viscera, we find four varieties of retroperitoneal cysts. First, retroperitoneal cysts with chylous-like contents. These are cysts of the lacteals, which, by retention and rupture, give rise to true mesenteric cysts containing chyle. Second, retroperitoneal serous cysts (Prizewoski). Third, dermoid cysts which originate in the structures which persist from fœtal life. Fourth, traumatic cysts (Schonwerth).

Pathology. Large cysts with chylous-like contents have frequently been found. Their retroperitoneal nature is unmistakable from the relation they bear to the colon and mesentery, and in one remarkable instance the tumor lay even behind the kidney. These tumors bear a very intimate relation to the mesentery; they are separate from the liver.

The origin of these cysts is in the lacteals, or they may by accident or disease have some connection with the thoracic duct itself. The character of the contents is the interesting feature of their pathology and diagnosis. Perhaps one of the most carefully observed and accurately recorded cases is that by Gustav Killian. This surgeon, after many attempts to obliterate the sac by aspiration, finally cured the patient by operation. The fluid in its macro- and microscopical examination and chemical analysis very closely resembles milk.

A second form of retroperitoneal cyst deserving, perhaps, more attention than it has received, is the retroperitoneal serous cyst originally described by the pathologist Prizewoski. A complete summary of all knowledge we possess on this variety of cysts may be found in an excellent dissertation of Dr. A. Obelinski, of Krakau. He concludes: First, that retroperitoneal serous cysts, while not often met with, are not of such great rarity. The reason of this is lack of or faulty knowledge of the existence of such growths. Second, they are cysts of slow evolution. Third, their origin is, according to Prizewoski, the Wolffian or Müllerian bodies. Fourth, they are innocent in their behavior. Fifth, contents, clear, serous fluid. Sixth, extirpation is a simple operation, comparatively free from danger.

The parasitic, dermoid, and traumatic cysts, the three other forms of retroperitoneal cyst, possess nothing peculiar or distinctive because of their special location, and do not require further consideration.

Differential Diagnosis. The exclusive or differential diagnosis of retroperitoneal tumors from conditions which closely simulate them, is, perhaps, one of the most difficult problems in surgery. A conclusion can be reached only by systematic investigation of each individual abdominal organ and its function, and in a careful study of the tumor itself, its physical characteristics, its relations, and, with the assistance of the aspirator, a careful microscopical and chemical analysis of its contents.

Retroperitoneal tumors must be differentiated from every form of tumors found within the abdomen, but we encounter particular difficulties in distinguishing these growths from tumors of the kidney, cysts of the pancreas, uterine and ovarian tumors.

Kidney and retroperitoneal tumors possess certain features in common. They both are retroperitoneal, in both the large intestine lies in front; both are dull between the tumor and vertebral spines, no space between the kidney or the tumor in which the fingers can be dipped; both grow anteriorly, consequently there is no prominent lumbar projection. Respiration influences but little either tumor.

Retroperitoneal tumors that grow between the mesentery are movable; all other forms are firmly fixed. Kidney tumors, unless inflamed, can be moved laterally and upward, and, whether solid or cystic, no matter what the size, retain some, often much, of their natural outline; the kidney has no sharp edges. Retroperitoneal tumors affect but little the normal function of the kidney. In renal tumors there is alteration in the character and quantity of the urine, and, finally, if the tumor be cystic, the aspirator will reveal the characteristic fluid in either case.

Cysts of the pancreas are also resonant upon percussion. They underlie the stomach, usually, and push the colon down. The tumor is usually in the epigastric or left hypochondriac region. It is not upon the physical signs, however, that we rely for differentiation. Cysts of the pancreas have been found only in adults; retroperitoneal cysts may occur at any age. Pancreatic cysts are very painful: patients suffer with colicky pains in the epigastrium, often of great violence; they have fatty stools, are frequently jaundiced; their digestion is impaired; there is rapid emaciation; the skin becomes pale and yellow, a symptom said to be pathognomonic. Diabetes mellitus is occasionally associated with pancreatic disease. These phenomena are, with exploratory aspiration, sufficient to discriminate the case.

Kuster emphasizes the great value of inflating the stomach

and colon as a means of developing the relation of pancreatic swelling.

Tumors of uterine or ovarian origin assume any dimension and position in the abdomen, and differential diagnosis of these from the tumors under consideration can be made only by thorough investigation into the history and subjective symptoms, and by careful vaginal and abdominal examination and conjoined manipulation. The majority of retroperitoneal tumors are revealed only at operation, and it appears that they are more frequently mistaken for ovarian and uterine tumors, perhaps because of the frequency of these growths, than all other conditions.

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DISCUSSION.

Dr. A. M. Cartledge, of Louisville.—Mr. President: I rise to thank Dr. Douglas for his excellent paper, and to say that one practical point brought out by him needs emphasis, and that is in searching for obscure abdominal enlargements in making a diagnosis, the question of displaced organs should be carefully considered. I have known the mistake occur of making the diagnosis of enlargement of a certain organ, when careful search disclosed the fact that the organ was displaced by retroperitoneal growths, as revealed by autopsy in one or two instances, and I emphasize that point especially as the most striking diagnostic feature of these retroperitoneal growths.

TUBAL AND OVARIAN HEMORRHAGE RESEMBLING RUPTURED ECTOPIC PREGNANCY.

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Since systematic and scientific study of ectopic pregnancy began to occupy the attention of the profession all cases of pelvic hemorrhage have been of deep interest, whether it was within or without the peritoneal cavity, and whether in greater or lesser amount. Unfortunately, the pendulum makes very long sweeps in medicine, and here, as elsewhere, we find it exhibiting this unscientific feature. A few years back pelvic hæmatocele was a condition that every practitioner appeared to meet occasionally, and many were the supposed causes of it. When the subject of ruptured tubal pregnancy was so universally taken up, some of the most aggressive investigators told us to search in every case of pelvic hæmatocele and we would find a ruptured ectopic pregnancy. This dictum, though not indorsed by all observers, found a ready following, and to this time the majority of students of diseases of the female pelvic organs have accepted it. Many others, while not able to disprove it, have, nevertheless, felt it to be too sweeping, and have quietly waited for the proper stroke of the pendulum of scientific truth as to the actual causes of pelvic hemorrhage of whatever form.

Those who do much abdominal surgery on women ofttimes meet with cases of pelvic hemorrhage into the peritoneal cavity of more or less severity in which the diagnosis of ruptured pregnancy does not seem to be justified, except by the blind following of the inexorable decision that it must be due to that cause. There have been many cases, too, in which a

presumptive diagnosis of ruptured tubal pregnancy was made —cases in which such symptoms as shock, sharp pain, irregularity of menstruation, even to amenorrhœa, the presence of a small tumor of the pelvis, and even death were present, and in which an autopsy has revealed no pregnancy, but instead a hemorrhage from a Fallopian tube or an ovary, or both.

While we make no attempt to cast reflection on the common occurrence of ruptured tubal pregnancy and its common etiological relation to pelvic hemorrhages, we merely desire to offer some very conclusive evidence against the positive statements that have gone out to the effect that we will always find this condition in these hemorrhages. There are many instances in which women are deeply wronged by such diagnoses. Ofttimes these hemorrhages have occurred in virgins at a very young age (Fordyce[11]) and in widows above reproach (Newman[22]). The prime question, then, is whether in some cases in which hemorrhage occurs in the pelvis of women, even where there is a tolerably good history of ectopic pregnancy having ruptured, there may not be some cause other than pregnancy, and, if such be the fact, whether we should not give to these various causes their proper position in the etiology of such hemorrhages. If such be true, then the study of this condition will lead to a still better knowledge of the pathology of the internal generative organs of women and their environments.

These hemorrhages result from ectopic pregnancy, from malignant disease of the uterus, appendages, or rectum, from varicose veins in the broad ligaments, from vermiform appendix disease, from inflammatory disease of the tubes and ovaries, and from many other sources. Our remarks will be limited to appendage disease, which the following case well exemplifies:

Ella B., colored, aged twenty-three years, was admitted to Columbia Hospital May 5, 1897, complaining of severe pain in the lower part of the left side of the abdomen. She was married and had had two children, the last four years ago, and no abortions; had been having "womb trouble" for the

past five years, and at no time had called herself well. Menstruation had begun at the age of thirteen years, was usually regular, was scant, and lasted three days; was sometimes slightly painful, and had last occurred two weeks before her reception. This period had been slightly delayed, had come with great pain, and had continued freely up to date.

An examination showed her to be quite feeble and pale; pulse rapid and feeble, and temperature raised. A mass was felt above and to the left of the uterus, and the right appendage, much enlarged, was adherent. The cervix and the perineum were both lacerated; the uterus was large, well forward, and partially fixed; nothing abnormal was noticed on palpation of Douglas's pouch. The mass felt to the left was thought to be a fibroid or a tubal pregnancy, and an operation was advised. On reaching the peritoneum in the abdominal incision it was found to be deeply stained brown, and when it was opened there escaped from its cavity quite a large quantity of fluid and coagulated blood. Ruptured tubal pregnancy was now thought to be the unquestioned cause of the hemorrhage; the omentum was glued down at a small point on the top of the left Fallopian tube an inch from the abdominal ostium; this tube lay high on top of the bladder and broad ligament, and with its accompanying ovary was adherent, but readily separated and elevated. It had the shape of a Bologna sausage, its dark-blue covering being no thicker than that of the sausage; the appendage was removed, and at the site of the adhesion of the omentum it was found to be minutely punctured, but the margin of the opening (one line in diameter) was covered by the omentum. The other appendage was too badly diseased to be left, and was, therefore, removed; the peritoneal cavity contained a considerable quantity of blood-clots, which was principally in Douglas's pouch, but which was not walled in by adhesions. After cleansing the abdominal cavity, ventrofixation of the uterus was done with silk, and the abdominal wound closed with buried continuous suturing with kangaroo tendon; recovery uninterrupted.

An examination of the specimen showed it to be a hemorrhagic cyst of the ovary that had opened into the peritoneal cavity, and was connected with the cavity of the Fallopian tube by a sort of canal or sinus formed by adhesions over the shallow groove of the ovarian fimbria of the Fallopian tube; the remainder of the fimbriated extremity was closed by adhesions. The tube was distended by a large blood-clot, quite dense and dark, and which upon section and careful separation showed nothing but blood; the wall of the cavity left after removal of the clot from the tube was perfectly smooth and even. The specimen was sent to Dr. Lamb, of the Army Medical Museum, together with the case-history. As a result of his examination, including the use of the microscope, he pronounced it a case of hemorrhage without the presence of pregnancy.

Whether the seat of hemorrhage was in the ovary and poured into the Fallopian tube, or had been in the tube and poured into the ovary, was not determined. Certain it was that the blood in the peritoneal cavity had come from the ovary rather than from the tube direct, as the small opening through the wall of the tube was carefully covered by omentum, as if an inflammatory process preceded it and, too, the ovarian blood-sac directly connected with the peritoneal cavity by the rupture mentioned.

The hemorrhage had probably originated at a menstrual period, from the Graafian follicle of the ovary just at the attachment of the ovarian fimbria of the tube. As the accumulation of blood increased the sac-wall ruptured into the adhesions mentioned, and the blood found its way along the canal formed by the groove in this small structure between tube and ovary, and emptied into the Fallopian tube. The hemorrhage remaining unabated, the tube-wall dilated into a thin shell. Perhaps, from resistance of the tube, or by a clot formed in the connecting canal, the flow of blood was diverted from that way, the ovarian sac ruptured into the peritoneal cavity and the blood poured into it instead. The quantity of blood found in the peritoneal cavity would indicate that the

hemorrhage remained unchecked for some time after this rupture occurred. The character of the pulse on admission to the hospital and the marked anæmia corroborate this evidence of continued hemorrhage. The above hypothesis seems to be the only plausible one.

The history of former uterine trouble, and no pregnancy for nearly five years; the rapid and feeble pulse, with the high temperature and anæmia; the severe pain with little distention, together with the unusual continued menstruation and the pelvic condition found by examination, led to a strong suspicion of the existence of ruptured tubal pregnancy. The appearance of the peritoneum and peritoneal cavity, together with the first sight of the diseased appendage, still strengthened this suspicion. It was not until after my examination of the specimen, and the report of Dr. Lamb that no pregnancy had recently existed in either tube or ovary, that this suspicion was completely dissipated.

As an example of this mistake in diagnosis brief mention is here made of a case in which hæmatosalpinx was diagnosticated as ruptured tubal pregnancy by J. Price :[26]

"Colored woman, twenty-two years old, had persistent uterine hemorrhage for five weeks, supposed to be due to retention of secundines after recent delivery, or possibly to an early miscarriage; menses at twelve years of age, regular, painful, and profuse; married October, 1889, and August 11, 1890, first child born instrumentally, with continuous poor health since. Admitted to hospital July 29, 1891; has had sacral and abdominal pain, with aching in the limbs and general prostration, since the hemorrhage, with large clots that occurred at regular time for menses, five weeks ago. The uterus was enlarged, cervix soft, and canal patulous; posterior and to the right of the uterus was a soft fluctuating mass about the size of a hen's egg; patient kept in bed, hot douches employed, and by August 2d flow was stopped. August 16th, abdominal section; both ovaries greatly enlarged, cystic tubes highly injected, and fimbriæ occluded; both appendages studded by large peritoneal cysts; the right tube distended by

a mass having the appearance of a gestation cyst, but which proved to consist simply of organized blood-clots. A hood of omentum enveloped the outer extremity of the tube and was adherent to the mass." Newman[22] reports a case of hæmatosalpinx he had operated on for ruptured tubal pregnancy in a widow. She had severe uterine hemorrhage with the usual history of ruptured tubal pregnancy. Griffith[15] reports the case of a woman, multipara, who had the history of an abortion at three months, at which a membranous bag came away; periodical bleedings followed; two weeks later noticed lump in lower side of right part of abdomen, quickly followed by lancinating pains in same region and great loss of fluid blood from vagina, followed by two similar attacks in a short time. Ectopic pregnancy diagnosticated; both appendages removed by operation; from right side large hæmatosalpinx and cystic ovary; small hemorrhagic infarcts in Fallopian tube found by microscopic examination, but no villi or other evidence of pregnancy; left tube was a large hydro-hæmatosalpinx. Briggs[5] also reports a case of hæmatosalpinx in which ectopic pregnancy was thought to be the condition. Croom[6] reports a case in which he diagnosticated ruptured tubal pregnancy of from twelve to fifteen weeks in which were present a souffle, a rapidly growing extra-uterine tumor, and uterine hemorrhage following suppression of the menses. Operation: came down on a dark sac, soft and fixed, containing blood, and which ruptured just as it came to the abdominal surface. He ligated the pedicle and removed it, still thinking it tubal pregnancy, but the microscope showed it to be hæmatosalpinx, with no trace of pregnancy. The same author quotes Paul Ruge[29] as having had an experience precisely similar. Goodell[14] has seen like cases. Morrison[21] reports a case of hemorrhage into the ovary that was diagnosticated as tubal pregnancy, and the literature of the subject teems with such cases as are here mentioned.

The frequency of hæmatosalpinx cannot be doubted, and ovarian hemorrhage is by no means rare. Hemorrhage from varicose veins in the broad ligament or ovary is not an im-

possibility. That these organs may rupture under the distention by blood or from other causes, and severe hemorrhage occur, is abundantly proven. Such cases have been reported by Duncan,[9] Pilliet,[25] Maurange,[20] Alloway,[1] Boldt,[4] Fowler,[12] and others. That urgent symptoms are present in most of these cases is attested by the many writers on this subject who mention the terrific shock and collapse, even when the amount of hemorrhage is not extreme. A quite considerable number of cases of hemorrhage from the ovary or the Fallopian tube perish. Peuch[24] reported a number of autopsies in cases of non-pregnant Fallopian hemorrhage, and, although at that time ectopic pregnancy was not so well understood as to-day, yet his careful report seems to prove his claims. Walter,[30] Lewis,[19] Fowler,[12] and Fordyce[11] report fatal cases, and others, in which abdominal section was successfully done, are reported by Boldt,[4] Alloway,[1] Knaggs,[18] Ashby,[2] A. B. Johnson,[17] and many other observers. These cases show how easily various hemorrhages into the pelvic cavity may be mistaken for the hæmatocele of ruptured tubal pregnancy. They also demonstrate how similar their histories often are to what we expect in ectopic pregnancy. Their termination, moreover, is the same—in that some get well without operation, others with surgical intervention, and many perish early unaided.

It may be well to briefly consider the causes of these hemorrhages from the tubes and ovaries, inasmuch as they are not at all uncommon, and so often lead to a mistaken diagnosis of ruptured tubal pregnancy, pregnancy, or other conditions. It is the consensus of opinion that in the case of the ovary the organ has been undergoing degeneration previous to the hemorrhage. It is well known that pelvic peritonitis usually cements the ovary to some of the surrounding viscera, and abdominal operators recognize in the resulting imprisonment a probable cause of the sclero-cystic degeneration of that organ so often found. We open the abdomen for the removal of pus-tubes, and find the ovaries are often not connected with the pus-sac, but completely or partially imprisoned by

the inflammatory adhesions. We will usually find, on closer inspection, certain tightly-drawn bands of connective tissue across the ovary, producing sulci on its surface. They will materially change the shape of the organ, giving it one somewhat like that of the cantaloupe. Generally, between these constricting bands can be seen a cystic degeneration of the organ, and which is nearly the same throughout its follicular portion. This inflammatory action has been going on in the ovary itself, and the connective tissue thus formed has, perhaps, prevented the complete development and rupture of the Graafian follicle. This includes ofttimes a fatty degeneration of the walls of the bloodvessels, with a resulting gradual dilatation of them to such an extent as to warrant the application to them of the term "varicose veins of the ovary" (Dudley,[8] Petit,[23] Fraisse[13]).

Now, from various causes, such as menstruation (Rollin[28]), traumatism (Walter[30] and Baer[3]), mental or sexual excitement, or shock, rupture of these veins, with loss of blood of greater or lesser degree, occurs. This may be only into a follicle or the stroma of the organ, or it may be that several follicles merge into one large blood-sac as the hemorrhage continues, their separating walls being weaker than the outer wall of the organ. This produces the ordinary hæmatoma of the ovary, as we often find on opening the organ, and which we are wont to attribute lightly to menstruation. If the ruptured bloodvessel be of good size, the outpour of blood may be quite large. If the distention of the sac thus formed become too much for its wall to withstand, rupture into the peritoneal cavity will occur. The amount of loss may vary from a slight staining of the peritoneum to a deluge of blood into the peritoneal cavity.

When the abdomen is opened in these cases, which sometimes is purely coincident, and at others from the emergency caused by the loss of blood, we will find a large quantity of free blood, fluid and coagulated, or a hæmatocele in the pelvic portion that may be quite well limited by peritonitic adhesions.

The hemorrhages into the ovary may be conveniently di-

vided into stromar and follicular. Stromar hemorrhage may be slight, causing but small infarcts, or it may be sufficiently great to make of the organ a mere shell containing a mass of blood-clot or pulp having the appearance of the spleen or the liver. This is probably of septic origin. If the shell burst, internal hemorrhage, followed by peritonitis and death, is very liable to occur. Follicular hemorrhage may occur (1) as a multiple vesicular variety of infectious diseases or poisons, such as meningitis, phosphorus poisoning, etc., and is usually in both ovaries; in this form there may be many hemorrhagic points scattered throughout all portions of the organ (Hanks[16]); (2) into dropsical follicles, that is, akin to hemorrhage into ovarian cysts, and is very rare; (3) from the corpus luteum, a variety denied by some writers, as will be later noted; (4) and most important, excessively abundant ruptures into the Graafian follicles at the menstrual period. This form is limited to one ovary, though it may occur at different times in both. It may be in degree so slight that only the surface of the follicle farthest from the periphery of the organ is ruptured, and here is well shown the effect of the connective-tissue barrier covering the surface of the ovary through which the follicle is in vain attempting to force its way. The rupture of the follicle is behind, with the formation of a hemorrhage cyst that may attain the size of an infant's head; or it is excessively severe, and ruptures into the peritoneal cavity, causing death from hemorrhage or from peritonitis. The celebrated case of Scanzoni was of this variety. At an autopsy upon a young girl, dying suddenly during menstruation, he found three litres of blood in the peritoneal cavity.

Mary A. Dixon Jones has described these hemorrhages into the so-called false corpus luteum, or corpus luteum of menstruation, and has mentioned a peculiar formation which she designates "endothelioma changing to angioma and hæmatoma and gyroma as the pre-stage of endothelioma" (Foerster[19]). Rokitansky was probably the first to describe hemorrhagic cysts of the corpus luteum, and says he believes

no true corpus luteum could be thus transformed. Byron Robinson, of Chicago,[27] goes even further, expressing doubt of the corpus luteum having relation to pregnancy. Foerster indorses the ideas of Jones in part, and throws grave doubt upon the constant relation between the true corpus luteum and pregnancy. He mentions a number of cases in which the true corpus luteum was found in women years after conception and cites the case of Papow, a prostitute, aged twenty-one years, who had never menstruated and never conceived, and who died of prussic-acid poisoning, and in whose ovary was found a fully developed corpus luteum. This case of poison should have had the "corpus luteum" in both ovaries, but shows quite strongly the liability of mistaking such conditions for a corpus luteum of pregnancy or of menstruation. He says the corpus luteum of menstruation is in many instances a mooted formation, and calls them pathological endotheliomata that form under the influence of chronic oöphoritis without coming to a typical end or gradually increasing in bulk, and frequently leading to the formation of hæmatoma under incessant local and constitutional trouble. We are inclined to this line of ovarian pathology. We cannot believe the many infarcts seen in ovaries are the marks always of either pregnancy or menstruation.

Doran[7] and others report cases of ovarian apoplexy, some of them occurring at the menstrual period, in which the ovary was nearly divided into two fairly equal parts by rupture from internal pressure. These cases are merely referred to to show the fragile state of the interior structure of the ovary in such hemorrhages and as proving the chronological relation between the inflammation and the hemorrhage.

The cases of hæmatosalpinx reported are legion, and most of them will stand the most crucial test of the supporters of the theory of ectopic pregnancy as the cause. This being true, it would appear that to longer contend for such pregnancy pathology is to obstruct the advancement of knowledge of the diseases of these organs. There is usually some grade of inflammation of the tube preceding the hemorrhage. It

may be to the stage of very marked degeneration of the structure of the tube, and with it a resulting weakness of the bloodvessels that yield to some unusual tension. In many of the tubes found containing blood, pus was also present, and in a few instances pus has been found in the ovary in small abscesses. This condition, no doubt, accounts for the frequent occurrence of peritonitis and death as sequelæ of these hemorrhages. To us it seems that to ignore such evidence of the frequent occurrence of hemorrhage from the ovary and Fallopian tube due to inherent disease of those organs, and to continue to diagnose ruptured tubal pregnancy without microscopical examination or other certain evidence, is to ignore scientific truths and to foster false pathology.

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DISCUSSION.

Dr. Richard Douglas, of Nashville.—Mr. President: Some very interesting questions were raised in the doctor's paper. I have twice removed hematosalpinx (unilateral) in which there was no reasonable probability of extra-uterine gestation. I rise particularly, however, to report a case that came under my observation only a week or ten days ago, at which time I saw a patient in consultation with Dr. Witherspoon. The history of the case, briefly stated, was that she had amenorrhœa during the month of September; she passed the normal menstrual period about three weeks; following that there was metrorrhagia at irregular intervals up to the day I saw her. Otherwise the woman was comparatively well. She was taken suddenly ill with symptoms of abdominal pain, slight nausea, considerable depression, and marked muscular rigidity. Twelve hours after the onset of her illness I saw her, when the pulse was 130, temperature 103.2°. The abdomen was beginning to distend quite rapidly. Vaginal examination revealed a tumor in the right broad ligament. The question lay between ectopic gestation and a leaking pus-tube. On account of the rapid rise of temperature so soon after the shock, I concluded the case was septic, and not ectopic gestation, and advised immediate operation. The operation was performed. On opening the abdomen about a pint and a half of milky-looking fluid escaped; the intestines were covered by a fibrinous deposit. Pelvic examination exposed a tumor as large as a goose-egg, perfectly black, which was found to be the right ovary. I aspirated the tumor and drew off several ounces of pure blood. I then brought the sac into the field, saw there was no torsion of the pedicle, and that the tube was perfectly healthy. I tied off the diseased appendage, and removed it. The specimen was subsequently examined microscopically, and no evidence whatever of gestation was found. It occurs to me that this was a clear case of blood-cyst of the ovary, such as was reported by the essayist, and in which there was no diseased tube and no special cause giving rise to it. The usual cause of blood-cyst of the ovary is torsion of the pedicle, although that was not the case in the patient I operated upon.

Dr. T. J. Crofford, of Memphis, Tenn.—I reported a series

of anomalous cases of extra-uterine pregnancy to the Tennessee State Medical Society this year. One of the cases was complicated by an ovarian cyst as large as a small-sized orange. I had about come to the conclusion from my own experience, which is limited as compared with that of others, that these cases were all due to ectopic gestation. I am very much obliged to the essayist for disabusing my mind of this idea. I have looked at his specimen with a great deal of interest, and I believe there was no pregnancy connected with it. I thought when he read his paper it was a mistake; that there was in all probability extra-uterine pregnancy, the fœtus being lodged in the folds of the intestine and being absorbed later. But after looking at the specimen and seeing the report of the microscopist, I thoroughly concurred with the doctor that it was not a case of gestation. I think his paper will do a great deal of good by encouraging the study of cases like this, particularly in cases of innocent girls who have been suspected of extra-uterine pregnancy. It will make operators careful before they commit themselves. I can very well see how incalculable injury can be done when we view these cases, as is ordinarily done, and we find operators who say that they are all cases of extra-uterine pregnancy. While I believe that ninety-eight out of every hundred are, yet there are possibly one or two in a hundred that will be due to other causes. I am satisfied now that I have had one case that was not extra-uterine pregnancy which I thought was at the time, although I said nothing about it. I am under personal obligations to the doctor for exhibiting the specimen this morning, and I think this sort of work, together with the exhibition of specimens, will do more to disprove false theories and get us on true ones than any amount of theoretical teaching or papers that are prepared in the library.

A CASE OF EXTRA-UTERINE PREGNANCY OPERATED ON AT THE SEVENTH MONTH.

By John G. Earnest, M.D.,
Atlanta, Ga.

Mrs. T., aged thirty-six years, mother of several children, reported to me in Atlanta, September 19, 1897, and was given a room in the private floor of the Grady Hospital. Five months before I had been called to see her at her home in the country, on account of profound collapse threatening life. I then had given me a history of irregular uterine hemorrhages, and made the diagnosis of ruptured tubal pregnancy of the left side. The patient had rallied somewhat, but her conditiou was still bad; so bad, in fact, that I believed that she would die under the anæsthetic if an operation was undertaken. As her condition was slowly improving it was decided to wait. Nothing further was heard from her until she reported in person, September 19th. At that time I found her abdomen distended by a tumor reaching on the left and centre as high as the umbilicus; while on the right was another and apparently distinct cyst, filling that side of the pelvis and extending well up into the abdomen. The enlarged uterus could be felt in the centre merging into the large tumor. Upon opening the abdomen the large tumor occupying the centre and left presented a surface somewhat irregular, very dark, traversed in every direction by very large bloodvessels that stood out prominently on the surface, reminding me of an enormous broad-ligament cyst that I removed some years since. The walls were very thick, and nothing could be made out inside by palpation. The enlarged uterus was enclosed

in this mass, and the shading off of the tissues was so nicely done that it had every appearance of a tumor springing from the uterus. The tumor of the right side was about the size of an adult head ; walls, about a quarter of an inch thick, and seemed to be distinct from the larger one, the dividing line dipping down between them about half the diameter of the tumor. To the larger mass were attached several coils of intestine, which were very dark, and changed in texture at the points of contact. In spite of the utmost care in loosening the coils, two rents were made in them. These were promptly closed by silk Lembert sutures.

The cyst on the right side peeled out without hemorrhage of consequence, but when the work of peeling off the placenta from the pelvic and abdominal wall began, the flow of blood was appalling. Pushing it as rapidly as possible, the mass was loosened and iodoform gauze quickly packed in behind it. The cyst was still unbroken, and had the appearance when lifted up of being a fibrocystic tumor of the uterus—the uterus forming the stem from which it sprang. At this juncture I concluded that it would be best to remove the uterus and drain through the vagina. As the uterine arteries could not be reached, a wire attached to a serre-nœud was thrown around the uterine body as low down as practicable and tightened, and the mass cut away. The condition of the patient now became so critical that the utmost haste was necessary. I therefore abandoned the idea of draining per vaginam; tied the uterine and ovarian arteries, packed the pelvis with iodoform gauze, which was brought out at the lower angle of the wound, and closed the abdomen with silkworm-gut. A large compress of cotton was firmly fastened over the abdomen by a very tight binder, and the patient put to bed.

The gauze was removed on the sixth day. On the eighth day fecal matter passed from the drain-track. From that time to the time of her leaving the hospital, on October 30th, most of her feces passed by the fistula. Five days after she went home I was informed that she was having free rectal evacuations, with a corresponding falling off of the discharge

from the fistula. If this fails to close spontaneously she will return to have it closed by operation.

The large tumor was covered entirely by an enormously expanded placenta. Beginning in the bottom of the pelvis it was firmly attached to the pelvic and a portion of the abdominal wall, its villi reaching well down into the tissues. From the top it was deflected from the abdominal parietes over beyond the centre, enclosing the body of the uterus. In the cyst thus formed was found a fœtus of about seven months. Much blood might have been saved, I think, if it had occurred to me to have an assistant compress the abdominal aorta while peeling off the placenta. Under similar circumstances another time I should try that expedient.

DISCUSSION.

Dr. J. Wesley Bovée, of Washington, D. C.—I would like to ask Dr. Earnest whether the pregnancy was intraperitoneal or extraperitoneal!

Dr. J. G. Earnest, of Atlanta, Ga.—It was intraperitoneal —evidently a cyst ruptured into the cavity of the abdomen itself.

Dr. T. J. Crofford, of Memphis, Tenn.—The main part was on the left side?

Dr. Earnest.—Yes. There was a prolongation of the decidual membrane—pushed over into the right side—that resembled an ovarian cyst.

Dr. Crofford.—When you opened the abdominal cavity, did you feel the placenta direct?

Dr. Earnest.—The peculiar feature was that the placenta covered over the entire top of the tumor, so that when the abdomen was opened the tissue brought into view was a portion of the placenta covering the entire tumor and reaching beyond the centre of the abdomen.

Dr. Crofford.—Was there any serous matter between the abdominal cavity and placenta?

Dr. Earnest.—Nothing at all. In attempting to peel the coils of intestine off I wanted to hug the tumor closely with my

finger; my finger-nail went to the centre of this tissue into the cavity. Instead of having the tumor emptied of liquor amnii, I had simply grumous fluid, resembling a mixture of coffee-grounds in syrup.

Dr. Crofford.—Did you turn the peritoneum under the placenta?

Dr. Earnest.—I did not stop to examine whether it was under the placenta or not, as I wanted to get the patient off the table.

Dr. Crofford.—The pregnancy was intraperitoneal?

Dr. Earnest.—Yes.

Dr. Crofford.—Was the tumor adherent to the intestines?

Dr. Earnest.—Yes, from above. When I opened the abdomen the tumor was up against the abdominal wall, but was not adherent.

Dr. Crofford.—All of the cases I have seen have been subperitoneal, having burrowed up under the peritoneum. I reported a case not long since in which I removed the entire sac and the uterus, where it began on the left side, and it had evidently broken extraperitoneally. It was primarily tubal, as most of these cases are. It ruptured into the layers of the broad ligament; hemorrhage continued, and dissected up the peritoneum from the base of the pelvis, then in between the layers of the broad ligament to the uterus, dissected the peritoneum off from the surface of the uterus. It then broke over into the right side and filled the cavity between the layers of broad ligament in the right side. These cases burrow to such an extent and destroy the normal appearance of the peritoneum to such a degree that it is hard to determine whether the case is subperitoneal or intraperitoneal, because the peritoneum is thickened, ragged, and dissected up in such a way that it does not appear natural.

As to whether the doctor should have torn away the placenta or not is still a question. There are those who claim it is best to remove it; there are others who maintain that the danger from hemorrhage is so great that it is bad surgery to take the risk, and they therefore content themselves with removing the cord near the attachment of the placenta, leaving nature to take care of it. There are others who claim that it is best to pack with gauze, so as to give it an outlet in case suppuration or a gangrenous condition should arise. But the point in the doctor's

case is whether or not it belongs to the subperitoneal variety. I have never seen the intraperitoneal variety. I have not much confidence in such a development in the peritoneal cavity, yet I suppose such a thing is possible.

Dr. Arch. Dixon, of Henderson, Ky.—The question raised by Dr. Crofford reminds me of a case in which I did not operate for extra-uterine pregnancy, but for what I thought was an ovarian tumor. The case was that of a widow who had a daughter sixteen years old. Pregnancy was not suspected. I differentiated the uterus entirely from the tumor. I operated, and found an extra-uterine pregnancy with full-term child, which was in the sac, macerated, with the placenta loose. The sac was connected in very much the same way as a Fallopian tube connects with the uterus, and the opening from the sac into the uterus was easily defined. I am of the opinion that this case was subperitoneal, although I am not certain, and never have been, regarding it. I have not reported the case heretofore, for the reason of not being certain whether it was subperitoneal or peritoneal. The question asked by Dr. Crofford prompts me to report it in a brief way. The fœtus was contained in a large sac; it was not adherent to the abdominal wall, but to the intestines below and above. In opening the sac the fœtus came away without any trouble. It had been there a long time, and, as I have previously said, the placenta was loose and in a macerated condition. The cavity was cleansed out and the wound closed. Glass drainage. The woman lived seventeen days after the operation, and died from hemorrhage, having got out of bed during temporary absence of nurse.

Dr. Richard Douglas, of Nashville, Tenn.—I wish to congratulate Dr. Earnest upon the success of his case. He certainly managed it well. The hemorrhage encountered would bother many of us. The interesting question in connection with the report of this case is the pathology. In the first place, he is positive that he had an intraperitoneal attachment of the placenta. There are two ways by which that may occur. One is by partial extrusion of the placenta, either through the fimbriated extremity or by a rupture of the tube and the placenta which is partially extruded; gradually acquiring a peritoneal attachment before separating from its tubal attachment, it loses its attachment and becomes intraperitoneal. Now, if he had a

complete extrusion of the placenta at any time during the progress of this gestation, I do not think it could implant itself, form new attachments, without complete separation from its tubal attachment. The case appears to be one of intraperitoneal placental attachment, and yet with extraperitoneal lodgement of the child, a very anomalous condition, one I can scarcely conceive of, and, while we accept this fact, the doctor states clearly that the placenta was attached to the peritoneum. If this is so, then the whole thing was intraperitoneal. There could not have been, in my judgment, an intraperitoneal placenta and broad ligament explanation for the fœtus.

Dr. J. Wesley Bovée.—It is a question in my mind whether most of these ectopic pregnancies that go on nearly or quite to full term are not extraperitoneal. In some cases, no doubt, the fœtus has been taken out of the peritoneal cavity; whether it developed in the peritoneal cavity or extraperitoneally and then ruptured into the peritoneal cavity is not as yet decided. But it seems to me, from what little experience I have had, that when the fœtus goes to full term, ruptured tubal pregnancy is extraperitoneal. I have seen two such cases within the last year and a half. One of them I have reported. There is no question in my mind that both cases were walls only, above the extraperitoneal, that the fœtus and placenta were both extraperitoneal. In the case of Dr. Earnest he did right to remove the placenta. The first thing he reached was the placenta, which was one of the most pronounced features of the case. To remove the fœtus he was obliged to remove the placenta. It being an intraperitoneal pregnancy, he had nothing else to do but to abandon the case if he had not first removed the placenta.

Dr. William A. McCandless, of St. Louis, Mo. (by invitation).—I had not expected to take part in this discussion, but this is a subject of such interest that I will take the liberty of reporting a case that came under my observation in the last two months. I have recently seen two cases of abdominal pregnancy, one under my own charge and another in the practice of a confrère. There are some interesting features connected with my own case. I am inclined to believe that it was a true peritoneal pregnancy. On June 20th I was called by an associate to attend a woman in a miscarriage. She had then a temperature of 103°, with foul discharges from the uterus. We

curetted the uterus and removed a considerable amount of foul placental tissue. She recovered, and I heard nothing more about her until after returning from my vacation in the summer. On September 1st I was called to see her by the family physician and found she was pregnant. The doctor pronounced the case one of abdominal pregnancy. The woman was in a fairly good condition. It was reasonable to believe from the history given that she was about six and a half months pregnant. Her condition very soon became serious. She was suffering considerable pain, and fainted a number of times, so that it was thought advisable, after consultation with well-known obstetricians and gynecologists, to operate upon her. The abdominal wall was opened, and lying centrally was a cyst that contained a child, with no adhesions whatever to the parietal peritoneum, the child floating in a perfectly clear, transparent fluid. There was the thin amniotic wall, and, so far as I could determine, no serous membrane over it. I opened this sac and removed the living child. The placental attachment was centrally within this cavity and so large that it seemed it would be impossible to remove the placenta without having alarming and perhaps fatal hemorrhage. I removed the child, tied the cord, and allowed the placenta to remain in situ, having at the same time attached the sac to sides of opening. We placed the child in a crude incubator and tried to save it, but it died before the next morning. The placenta had to come away in pieces. Very little of it appeared to be absorbed; but in a few days the chorion was distended and filled with a dark-looking fluid; it ruptured as soon as I touched it, and a large quantity of blood escaped. After the dark venous blood had discharged, there quickly came a bright arterial blood, which poured out in such a volume that the woman fainted. I packed the cavity and repacked it at least twenty-five times, profuse hemorrhage occurring at nearly every dresssing. The last hemorrhage she had was ten days ago. I think the placenta is now all gone. But during a large part of the time she has been septic, the temperature ranging from 99.5° to 104°, and sometimes a little higher.

In connection with this case I desire to emphasize one point, and that is the importance of removing the placenta in these cases if it can be done. Another feature of interest connected with this case was the double pregnancy. The miscarriage was

brought on by fright. They were residing in rooms above a saloon; a fight had taken place among some of those who were in the saloon. She became alarmed, hemorrhage came on, miscarriage followed, the placenta remaining, and it was in this condition that I first saw the patient.

Dr. Rufus B. Hall, of Cincinnati, Ohio.—How long ago was that?

Dr. McCandless.—It was on the 20th of June.

Dr. Hall.—Is it certain that she had a miscarriage?

Dr. McCandless.—That is an important matter. The placenta was removed and examined carefully. I appreciate the fact that there might have been hemorrhage or even infection here, without a uterine pregnancy, and all these conditions might lead one ordinarily to suppose that it was ectopic pregnancy. The placenta was turned over to a gentleman who was with me, who examined it carefully and reported to me that it was undoubtedly a portion of a true placenta.

Another case I saw with Drs. Dorsett and Hypes, of St. Louis, as well as Dr. Fairbrother, of East St. Louis. I did not believe the pregnancy was intraperitoneal. I think the fœtus developed subperitoneally. I think the placental attachment, its envelopments, and the history and appearance of this case, and the adhesions that existed between the sac and the parietal peritoneum plainly indicated that it began and continued its growth outside of the peritoneal cavity. Dr. Hypes is present, and I would like to hear him report this case in the absence of Dr. Fairbrother or Dr. Dorsett.

Dr. Hall.—I would like to ask whether or not a fœtus was found?

Dr. McCandless.—No fœtus was found, so far as I know, by the physician in charge, but the circumstances were such as to lead us to suppose that it was lost.

Dr. Douglas.—In the first case, was the gestation supposed to have advanced much?

Dr. McCandless.—Hardly seven months.

Dr. Douglas.—What was the interval between the abortion and operation?

Dr. McCandless.—Between the 20th of June and the 3d of September.

Dr. Hall.—I rise to take part in the discussion in reference

to this subject. It is a matter of great interest to all who are engaged in this work. It is a well-known fact that in ectopic pregnancy in any form not infrequently there is developed in the uterus decidua or placenta, so-called; that at times it is difficult to differentiate whether or not the woman has really had an abortion. I for one am not willing to accept the correctness of the doctor's statement that the woman had an abortion, unless he brings positive proof that there was a fœtus discharged from the uterus. The fact that the woman said there was a fœtus does not prove it to my mind. On several occasions I have had patients come under my observation where there was a decidual discharge from the uterus in ectopic pregnancy. I presented a case quite recently before the Cincinnati Obstetrical Society of a woman who had a four or five months' ectopic pregnancy. The attending physician treated her for an abortion. He removed a piece of placenta as large as one-half of his hand. She went to bed some four months before the operation, and it was believed that her symptoms were due to sepsis. Before the operation I removed from the uterus a piece of gangrenous tissue. I presented it with the ectopic specimen to the Obstetrical Society of Cincinnati a few weeks ago. This is one of many cases that occur in this line of work where the physician is misled. From the data before us in the case under discussion I do not believe we are justified in saying that the woman had a uterine pregnancy.

Dr. J. R. Weist, of Richmond, Ind.—I would like to refer to a case that has puzzled me very much, as I am only a general surgeon. Six or seven years ago I opened a woman's abdomen and found a cyst attached to the anterior and lateral abdominal level of the umbilicus. Below the cyst was free. The outlines of the uterus were determined; there was apparently no connection with the broad ligament, and the ovary on either side seemed to be in a normal condition. Inside of the cyst there was a dead child that had gone to full term. The placenta was adherent from the lower part of the cyst to its upper part, as high as the diaphragm and attached to it. I have not found it easy to account for the conditions present, if in all cases of abdominal pregnancy there is a rupture of the Fallopian tube an escape of its contents, and a new attachment somewhere in the abdomen. In this case the placenta was not removed; there was great

hemorrhage at times for several weeks; finally the placenta came away piecemeal. The woman is alive to-day. The case was very imperfectly reported by another practitioner in the *American Journal of Obstetrics* a few years ago.

Dr. George H. Noble, of Atlanta, Ga.—If I understand the description given to me by Dr. Earnest of this case, the placenta must have been intraperitoneal. He made out, evidently, the broad ligament upon the left side and described the placenta as being attached, its posterior surface to the floor of the pelvis and the left lateral wall as far back as the rectum and up to the brim of the pelvis. From that point the maternal surface of the placenta was detached and free, dipping over to the uterus. If I rightly understand it, the placenta must have been intraperitoneal or these attachments could not have taken place.

Dr. Earnest (closing the discussion).—The explanation just made by my friend Dr. Noble clearly describes the case exactly as it was, except the placental attachment reached above the pelvic brim back on the abdominal wall, and the free part was deflected over toward the centre and presented the appearance of a placenta of normal term. I might mention incidentally, as a part of the history in this case, that the passage of a polypus was reported by the physician in charge. I have no doubt it was a decidual membrane, such as we have seen in cases of extra-uterine pregnancy, and in one such case it came away whole, presenting a pear-shape, and a careless observer might have mistaken it for a polypus. As to the pregnancy, I have no doubt whatever that it was intraperitoneal. I do not see how it could possibly have been otherwise; at the same time I believe, with Dr. Douglas and others, that in every case in which a tubal pregnancy is converted into an abdominal pregnancy a portion of the placenta preserves its attachment to the tube after its rupture until a new attachment can be formed. I cannot understand how it would be possible for the vitality of the fœtus or of the placenta to be maintained if entirely cut loose from its circulation.

CYSTIC FIBRO-ADENOMA OF THE FEMALE BREAST.

By L. M. Tiffany, M.D.,
Baltimore, Md.

The above title accurately indicates the mammary disease of which it is my purpose to speak. The occurrence of cysts as a confusing element in the course of solid tumors of the breast is not so uncommon, and may greatly resemble the subject treated of in this paper, yet the clinical history and anatomy of cystic adenomata is sufficiently clear, and the prognosis sufficiently important, to justify careful study; in most cases an accurate diagnosis can be reached before operation. Eleven cases are recorded on my note-books; they show many symptoms in common, and are, briefly, as follows:

Case I.—August 25, 1882, Mrs. H., white, married, aged forty-two years; one child, twenty years old; periods regular; a large, fully developed person. She suffered with the left breast. There was no history of injury or abscess. The breast contains apparently two moderate-sized tumors, tense, resilient, not adherent to the skin, fluctuating (?); hardness is elsewhere noticed at points in the breast, and lateral pressure with two hands shows undue general firmness; there is no dimpling or retraction of the nipple. The recognition of the trouble dated back eight months. The whole gland was removed with some skin; no axillary enlargements found. On section the gland contained six or eight cysts, which were lined with epithelium, and the contents of the cysts were of varying color—dark yellow, light yellow, etc.

Case II.—December 4, 1886, A. J., white female, unmarried, normal stature, aged forty-one years; periods regular;

had an enlargement of the left breast. Fifteen months ago she was told by her physician that the lump in the breast was a cyst, and needed no attention. Little or no pain existed, and the growth had steadily continued; there were no axillary enlargements; there are present to touch two lumps, smooth, elastic, etc. The whole breast was removed; the gland was filled with cysts, the largest two inches by one and one-half inches in diameter, containing clear fluid. Milky fluid was met with in some of the cysts.

CASE III.—A white female, married, aged forty-nine years, mother of three children, was operated on by me October, 1890, for cystic disease in the left mamma, dating back several years. The usual clinical symptoms were present. All went well. Sections of the breast disclosed many cysts, varying in size from one inch in diameter to that of a pinhead. She remains well at this date.

CASE IV.—Mrs. J. B., white, married, aged forty-six years; operation November 17, 1895. During the past two years in right breast a slowly increasing enlargement existed; it was smooth, elastic, painless, rounded; movable with the breast on the thoracic wall; the skin was not involved, and could be pinched up from the growth. A cyst was recognized, and the whole breast excised. The axilla was opened and nothing found. Healing was prompt, without notable incident.

CASE V.—Mrs. D., white, married, aged forty-five years, the mother of three children, the youngest being twenty-one years old; has several cysts in left breast. The usual history was obtained, and the entire breast was removed December, 1887. Four years and six months later there was no recurrence.

CASE VI.—Mrs. T., white, married, childless, aged forty years; in good health and flesh; menstruation established at thirteen, and continues. No trauma, no heredity. In the right breast, just above the nipple, exists an elastic, rounded swelling, painless, movable with the breast, non-adherent to the skin, two inches in diameter; a smaller swelling exists two

inches to the outer side of the first described lump; three or four other points of hardness are to be felt in the mamma; no cause for the swellings is recognized by the patient. The other mamma is normal. The whole breast was excised; the axilla was opened and nothing found. Healing took place without incident. The breast was found to be the seat of five cysts containing either clear or milky fluid. The cysts were lined with epithelium, evidently being dilated ducts. Now, fifteen months later, the left breast contains a cyst. Sixteen days before operation the patient had become aware of a hardness in the breast, for the first time.

Case VII.—F. B., white, unmarried, female, aged thirty-four years, came into my care June, 1896; height five feet four inches, weight 175 pounds; healthy. Five months ago her left breast was struck, and remained discolored for two weeks. No hereditary predisposition to disease was acknowledged. The usual history, as given with the other cases here recorded, was obtained. The whole breast was removed, and the resulting wound healed promptly. Two cysts existed in the breast. The axilla showed nothing. The cysts contained clear fluid.

Case VIII.—Mrs. M. R., white, American, married, aged fifty years; in good flesh and appearance; height five feet four inches, weight 125 pounds. Menstrnated at sixteen, and continues; has borne four children, the youngest now twenty-two years of age; one miscarriage; all her children nursed by Mrs. R. A swelling in left breast was noticed six years ago, which is now painless, elastic, rounded, non-adherent to the skin, movable with the breast, etc. I operated May, 1897, finding a cyst three by four inches, containing clear fluid. The axilla was opened, but contained nothing. The nipple was not involved, was prominent, and the follicles of the areola were prominent. No trauma; no hereditary predisposition. The right breast showed nothing abnormal.

Case IX.—K. M., female, white, American, unmarried; seen and operated upon June, 1897; aged thirty years; tall, muscular. She suffered from a tumor of the left breast, which

had been discovered two months previously. No hereditary tendency was acknowledged; there had been no traumatism. The lump existed below and to the inner side of the nipple; it was painless, freely movable, elastic, irregularly bossed, and about one and one-half inches in diameter. The axillary glands were slightly enlarged. Excision and recovery.

Case X.—May, 1897, F. B. came into my care with the right breast affected, as had been the left one year before. The breast was removed and the axilla opened; this latter with negative result. The wounds healed at once. One cyst existed with clear fluid contents.

Case XI.—May, 1897, M. G., white, female, unmarried, aged thirty-six years; American, medium stature, weight 100 pounds; menstruation established at sixteen years. Noticed June, 1896, a lump in left mamma about the size of a walnut; a blow from a broom handle was the supposed cause. The skin was smooth and non-adherent to growth, which was generally rounded, firm, elastic, nodular; the nipple was slightly held from below; the skin at one place somewhat darkened (subjacent cyst); vessels were apparent in the skin; the breast was about twice the size of the other (right). After removal, section shows numerous cysts with walls more or less firm, containing clear viscid fluid. Healing took place without incident. There were no glandular axillary enlargements.

Case XII.—L. L. H., white, female, married, childless, aged thirty-eight years, came into my care September, 1897. She was five feet two inches tall, and weighed 117 pounds. There existed cysts in both breasts. The usual history was given. Both breasts were removed in their entirety under one anæsthetization. Prompt recovery followed. The axillæ showed no enlargements.

I have brought these cases together so as to show the more prminent characteristics, and while the number is too small to generalize from, yet at least it can suggest.

Age. The patients are not adolescents, but nearing the menopause, the youngest being thirty-six years old, the others decidedly older; menstruation continued, however; this being

true of No. 8, who was aged fifty years. The fifth decade of life is evidently the season of preference. They were all well developed, not suffering from other ailments, and appeared able to do their duties incident to the social status that they occupied. It is, perhaps, noticeable that they were all Americans and all white.

FECUNDITY. One patient is recorded as having had four children, two as having had three each, one as having had one; it seems as if a large family does not predispose to the form of cystoma under consideration. The commencement of menstruation did not differ from that usual with those the subject of any mammary growth.

HEREDITY. Of this I can obtain no history.

TRAUMA. Nothing definite.

LOCATION. The growth was situated in the left breast eight times, in the right twice, once in both; once, the left breast having been removed, the disease developed in the right, and once the right breast having been removed, the left breast developed the disease, but had not submitted to operation. From a limited observation the left appears the more liable of the two breasts to be affected first, though a distinct tendency is apparent for both breasts to be the subject of disease, if not coincidently, then consecutively.

I am not able to designate any region in the breast as liable to be affected, save only that the mammary gland is the subject of disease, not the periglandular fat; this latter, however, is sometimes absorbed by pressure; a cyst protruding from the gland surface is recognizable through the skin as a darkish, discolored area highly characteristic from the standpoint of diagnosis.

SKIN SURFACE. There is no special adhesion to the chest. Two types of disease have forced themselves upon my attention: First, one or more cysts of moderate size, whose long diameters may lie in any direction, not by any means corresponding to the known course of the milk-ducts. These may be of stony hardness, for they are tensely filled sacs with firm walls, are elastic, have a generally rounded contour, movable

with the breast, and to a certain extent in the mammary tissue; it is this mobility in the breast, slight as it is, which to the practised hand renders a differentiation between glandular cyst and carcinoma possible by touch. Second, many small cysts, very numerous, perhaps, scattered through the substance of the mamma. To the examining hand a breast so affected conveys the sensation of a firm, hard mass where the cysts are numerous, elsewhere it may be possible to recognize small hard spots, as if bird-shot were hidden in the tissue; the general shape of the mammary gland, though stiffened and thickened, is preserved; if the hands are applied to the periphery of the breast where in contact with the thorax, at the opposite poles of a diameter, the gland will be felt of its usual shape, but firmer and stiffer than usual. It is needless to say that comparison with the other breast should not be omitted, unless it have been already removed. Adhesion of skin to the cyst does not occur, nor does the skin dimple. Retraction of the nipple may be present. The affected breast may rest upon the chest at a higher level than its fellow. These two last are classical symptoms of carcinoma. In one case, where the nipple was unduly prominent, a cyst existed beneath the areola. Slight enlargement of glands in the corresponding axilla has been noticed by me in one case, but never general infection.

The period during which the patient knew the disease existed, before bringing it to my notice, varied from six years to two months.

Neither abscess during lactation, trauma, nor any special reason has been assigned as a causative factor for the growth's inception. I am ignorant to what size a mamma so affected may grow, for I have always interfered by operation shortly after seeing the patient, and a sac more than two inches (5 c.m.) in diameter, in this disease, has not fallen under my notice.

I have seen many larger cysts, but they were present as complications in the course of other pathological conditions, such as intracanalicular fibromata, malignant tumors, etc.

From the former of these the unilocular character of the cyst, the firm base of the fibroma, and the non-involvement of the rest of the gland will greatly assist the differentiation. From the latter the physical signs already indicated, together with the history, will usually suffice for the same purpose.

It may be accepted that the tendency of a cystic fibro-adenoma is to involve the whole of one or both mammæ, and that such involvement should not be permitted to exist in a recrudescent breast; hence the affected breast should be removed.

The possible change of type of a tumor, or whether a simple growth may by pressure cause irritation, and so induce a malignant tumor, is scarcely worth while to discuss; the removal of the breast in its entirety is imperative when seen. If both mammæ are involved equally they should both be removed. In view of the tendency of the condition to involve both breasts, should one only need removal, the other one should be examined at stated intervals.

Examination of the removed tumors was made by Dr. Berwick B. Lanier, and is herewith appended:

"I have examined three of these tumors, and, as they agree so closely both in microscopic and macroscopic appearances, the description of one will answer for all.

"*Macroscopically.* The breast is full and hard, with numerous small nodules to be felt under the skin, but not adherent to it; these nodules vary in size from a pea to that of a walnut. Some of them feel as though they contained fluid.

"On cutting through the breast the normal glandular tissue is seen to be replaced by a dense, hard, white tissue, presumably fibrous, with innumerable cysts containing either glairy, sticky fluid or a cheesy material. The fluid varies in color, in some places white and transparent, in others green, red, yellow, or a dirty brown.

"*Microscopically.* Sections were taken from various parts of the tumor, hardened in formalin (10 per cent.) for twenty-four hours, and in alcohol; they were embedded in celloidin

and stained by the ordinary method, with hæmatoxylin and eosin.

"Under the microscope the sections present the following appearance: There is a mass of white, fibrous tissue, including cysts, fat, and tubules. The tubules are lined with several rows of cuboidal epithelial cells, and are massed in discrete areas, presenting somewhat the appearance of an intracanalicular growth; this is probably due, however, to the ingrowth of fibrous tissue surrounding them.

"In some localities the tubules are seen to be much dilated and in parts completely filled with cells, while outside they are surrounded by a well-marked area of round-celled infiltration; here and there in the tubules are to be seen loose desquamated cells, which are granular and swollen, presenting somewhat the appearance of the cells of sebaceous glands; these cells have very deep-staining nuclei, and when seen in the small tubules are deeply pigmented of a brownish color, as though blood-stained, and, as here and there one can find the remains of red blood-corpuscles, this is probably the case. Many of the ducts are lined by papillary ingrowths made up of cylindrical cells, which take the eosin well (nuclei at the bases).

"The tubules present all stages of dilatation up to the large cysts, and many of the cysts are lined by several layers of cells resembling pavement epithelium.

"The fibrous tissue, which is so abundant, is rather wavy, not very cellular, and well supplied with bloodvessels. It stains very faintly with eosin.

"At no place was there any tendency for the cells lining the tubules to make their way outside of their investing tissues. This was particularly looked out for, inasmuch as the general opinion seems to be that these tumors are prone to recur after extirpation; but there is not a spot where even a suspicion of malignancy could be excited.

"The diagnosis of benign cystic fibro-adenoma is, of course, perfectly clear."

DISCUSSION.

Dr. George F. Hulbert, of St. Louis, Mo. (by invitation). —Mr. President: The cases presented by Dr. Tiffany in his paper recall a limited experience of mine with fibrocystic degeneration of the breast, presenting some interesting features as regards excitation, and it was repeated in a sister in the same family. The young lady, when first presenting herself, gave clear evidence of fibrocystic tumor of the breast, with one large cyst and a number of small ones distributed through the gland. In trying to interpret the conditions as to causes, bearing in mind the possibility of trauma, she told me that she feared the great cause of her difficulty was the custom that she and her sister had carried out. I found out afterward that she had indulged in using so-called breast-developers, the principle of which is to create a vacuum around the circumference of the breast, and in this way draw a certain distention of it into the vacuum created by the developer. On making inquiries along this line to get some cause for it, the suggestion occurred to me that it might be possible that this was a rather largely disseminated practice among young girls and women who have very little bust development, but would like to have it, and I have undertaken to investigate the subject a little. I have been surprised at the dissemination of this practice among young girls and women for the purpose of creating large, full, handsome busts. I think it is possible that I shall have to remove the breast in the sister in its entirety in a month or so; she presented herself with a smaller enlargement, and it is perfectly clear that we have here a fibrocystic degeneration in the breasts. On being asked a question, she confessed to being guilty of the same practice.

I simply offer this as a suggestion of possible trauma in some cases of fibrocystic degeneration of the breast. I think it is difficult in many instances to account for the etiological factor that starts the pathological condition. This character of trauma presents an ideal condition, in that, by the abnormal hyperæmia and strain accomplished, conditions are established that may become a soil for fibrocystsic degeneration of the breast.

Dr. Richard Douglas, of Nashville, Tenn.—The essayist

has relieved my mind very greatly, because only recently I diagnosticated a case as carcinoma of the breast, operated, removed the entire breast, went up into the axilla, found no enlargement of the gland, and after removing the specimen I cut it open and found it was a cyst, such as has been described by the essayist. There was no growth of new tissue; no hyperplasia. It was situated rather peripherally; it was three inches and a half from the nipple. The nipple was retracted. The patient had considerable pain, and the family history was so decided that I was warranted in removing the breast. After the breast was examined, I regretted very much the operation that had been done, thinking perhaps something else would have answered. But if I understood the essayist rightly, in those cases we are warranted in removing the entire breast. I have now a woman under observation in whom, if you catch up the breast, I think any of you could discover a large tumor, and I have several times used her at clinics, when material was short, to demonstrate tumor of the breast to my classes. If you put the hand flat on the breast the tumor is gone. I am under the impression that a surgeon can sometimes develop a tumor out of a normal breast by such manipulations and a superficial examination. It is one of those cases in which there is some enlargement of the terminal end of the lacteal ducts, without any distinct tumor formation, and gives all the appearances of a tumor of the breast when the organ is squeezed, but when pressed against the hand it is normal.

Dr. Tiffany (closing the discussion).—This subject of cysts of the breast is a very interesting one. Family predisposition has not been seen in any of my cases, so far as I could learn. I am glad to know that Dr. Douglas has seen such a case. In regard to the removal of the entire breast, referred to by Dr. Douglas, I not only think that it is best, but right. It is called for necessarily in these cases. In the past I have found that all mammary tissue that is left may go on to degenerate after the removal of a circumscribed area of the breast. There will be a tendency naturally to degeneration, and there will be an added cause for irritation in the scar which follows the healing of the wound made at the primary operation. These breasts may undergo malignant degeneration. Where there is a distinct family predisposition and hardness, so much so as to cause us to think that carcinoma could be present, a piece of the mammary gland might

be removed for examination. In the cases I have seen, where the cyst has complicated any malignant growth, the tumor was deeply situated upon the surface of the great pectoral muscle. Those are the cases in which the pectoral muscle should be removed, probably in all instances; but in those cases where the cyst lies on top of the growth, the growth may be small, but we should resort, nevertheless, to complete excision.

AN EXHIBITION OF RADIOGRAPHS,

With Remarks.

By A. V. L. Brokaw, M.D.,
St. Louis, Mo.

In December, 1895, Wilhelm Konrad Roentgen, in a communication to a scientific society on a new form of radiation, startled the scientific world and placed thousands of investigators in a wide field of discovery.

Of the many conspicuous advances made in medical progress since the year 1800, that of the translumination of the body by the x-ray for diagnostic purposes is the most strikingly wonderful.

Marvellous, indeed, has been the progressive utility of this agency. But a few months have passed, and the crude experimental stage has been lost sight of, and to-day it is impossible to predict to what extent or limit the mysterious power of this new form of radiation will be applied. From month to month, with rapidity unequalled, perfection of the apparatus has taken place. The many mechanical improvements in the later type of machines show the activity of the electricians in a most striking manner.

The scope of usefulness of the x-ray is daily made manifest. The invention is a fitting climax to the close of the nineteenth century. If the progress made in the last few months is to be considered as an index, our anticipations will probably be more than realized.

To-day the armamentarium chirurgicum is not complete without an x-ray equipment; before another year has passed

Fig. 1.

NORMAL THORAX.

Fig. 2.

A CASE OF CARDIAC HYPERTROPHY AND ANEURISM (ENORMOUS) INNOMINATE ARTERY.

Fig. 3.

RUBBER DRAINAGE TUBE IN THORAX IN A CASE OF EMPYEMA.

FIG. 4.

BULLET IN POPLITEAL SPACE.

FIG. 5.

OLD FRACTURE OF THIGH.

FIG. 6.

SILVER WIRE USED IN WIRING A COMMINUTED FRACTURE OF TIBIA.

Fig. 7.

BULLET IN POPLITEAL SPACE.

Fig. 8.

COLLES'S FRACTURE.

Fig. 9.

FRACTURE OF RING FINGER.

Fig. 10.

OSTEO-ARTHRITIS OF ELBOW.

Fig. 11.

COMPOUND COMMINUTED FRACTURE OF LEG.

Fig. 12.

A CASE OF SYNDACTYLISM.

Fig. 13.

FRACTURE OF STYLOID PROCESS OF ULNA.

Fig. 14.

DISLOCATION AT WRIST. (ULNA.)

Fig. 15.

FRACTURE THROUGH CONDYLES. CHILD, AGE TWO YEARS.

Fig. 16.

FRACTURE OF RADIUS AND ULNA. NOTE COAT, ETC.

Fig. 17.

BUCKSHOT IN LEG AND FOOT.

Fig. 18.

FRACTURE-DISLOCATION OF NECK.

Fig. 19.

SHOWING SILVER WIRE USED IN WIRING A FRACTURE-DISLOCATION OF CERVICAL VERTEBRÆ.
(SIDE VIEW.)

Fig. 20.

SHOWING SILVER WIRE USED IN WIRING A FRACTURE-DISLOCATION OF CERVICAL VERTEBRÆ.
(POSTERIOR VIEW.)

Fig. 21.

MARBLE LODGED IN LOWER END OF ŒSOPHAGUS. (CHILD.)

Fig. 22.

BULLET IN GREAT TOE.

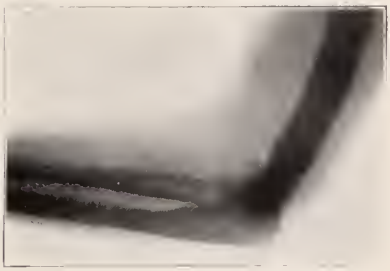
Fig. 23.

ARTERIES OF A CHILD INJECTED WITH MERCURY.

Fig. 24.

BULLET IN FOOT.

Fig. 25.



OSTEO-ARTHRITIS OF ELBOW.

Fig. 26.

NORMAL KNEE-JOINTS.

Fig. 27.

BULLET IN ARM.

Fig. 28.

TUBERCULOSIS OF KNEE-JOINT. (BEFORE RESECTION.)

Fig. 29.

KNEE-JOINT AFTER RESECTION FOR TUBERCULOSIS.

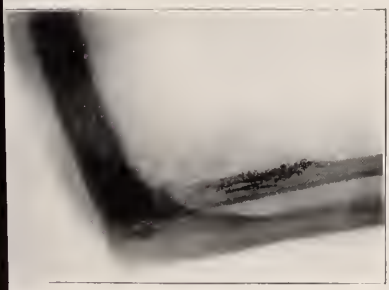
Fig. 30.

NEEDLE IN FOOT. (OS CALCIS.)

Fig. 31.

SUPERNUMERARY TOES.

Fig. 32.



OSTEO ARTHRITIS OF ELBOW.

Fig. 33.

RHEUMATIC ARTHRITIS OF TARSAL AND ANKLE JOINTS.

Fig. 34.

PATHOLOGICAL DISLOCATION OF HIP.

Fig. 35.

NORMAL HANDS.

the same necessity in its use in medical diagnosis may be apparent.

That the luminiferous vibrations have assumed a position of greatest importance—nay, necessity—to the surgeon who is cognizant of what may be accomplished by their aid, cannot be contradicted.

The great difficulty at present seems to be that comparatively few are able to secure the best practical results. With a better understanding of the technique of management of the apparatus and the tube, and with a proper selection of both, the work of the expert will be equalled by all.

It is far from my purpose to advocate a particular type of apparatus, but I am convinced that, whether a coil or a static machine be selected, if the same be of the higher type and made by a reliable manufacturer, results equally good will be obtained.

Purity of current is essential, and if a coil be used, let the current come direct from a proper battery of storage cells, not from the commercial street current, whether direct or alternating, as neither is pure, but in a measure mixed.

The storage cells, once charged, should furnish the current in its purity, and the commercial current may then be cut out until further charging is necessary.

Personally, my experience leads me to favor the static machine of a powerful type. With such a machine my best work has been done. With an eight-plate static machine driven by a motor, and a large Monell tube, the results obtained equal those of the expert, and what is particularly pleasing in the use of this type of apparatus is that no advanced or extensive knowledge of electrical theory is at all necessary.

The secrets of success in obtaining brilliant radiance in a Monell tube are readily mastered by those who have only a superficial acquaintance with electrical principles.

A most satisfactory feature in using the static machine is in evidence when using the fluoroscope, as a tube properly manipulated will remain for hours giving off a steady radiance

without flickering. No coil apparatus has as yet been so perfectly balanced as to present this feature in its continuity.

This steadiness of fluorescence obtained by the use of the static machine is of great practical advantage in fluoroscopic work, although a slight irregularity in the glow seems to have but little ill effect in radiographic results.

The standard of excellence required by me in the working of a tube is that the cardiac pulsations must be plainly visible. Anything short of this is not considered efficient. The apparatus in present use, even with a tube of ordinary, not extraordinary efficiency, distinctly reveals small coins or the operator's hands through the skull, thorax, abdomen, or thigh.

The early difficulties in my experimental work were dissipated after a brief hour of instruction from the master-hand of Dr. Monell, of New York, and at present the x-rays are utilized in a routine manner in my daily surgical work, and are found to be of incalculable value in making accurate diagnoses.

This satisfaction and the avoidance of mistakes fraught with unpleasant if not serious consequences, more than repays the early trials.

Repeatedly have misplacements, even of slight character, in the treatment of fractures been corrected; more than once the true character of joint lesions made clear, the extent of malignant disease in bone and the site of origin been determined. The detection of embedded foreign bodies has been made clear when otherwise no certainty was possible as to location or relationship.

It is my pleasure to present these two hundred radiographs illustrative of the work we have in a very routine manner accomplished.

Your attention is particularly called to the radiograph of a fracture-dislocation of the cervical vertebræ and to the radiographs showing the silver wire in situ that was used in wiring the segments of vertebræ together. This radiograph was made several months after operating upon the case.

The rubber drainage-tube used in a case of empyema is distinctly shown.

The radiographs of the heart, the thorax in its entirety, the fractures of the dorso-lumbar vertebræ, the pelvis, the several fractures and other lesions of the bones, and the shadow of a marble seen in the œsophagus, illustrate the wide scope of utility of the x-ray in the hand of one laying no claim to the title of an expert. The half-tones illustrating this paper are the indubitable evidences of what may be accomplished by any surgeon present. Several reports have of late appeared, especially in the daily press, concerning the ill effect following exposure to the x-ray. Many of the reports are highly sensational and some are gross exaggerations. A few very severe and extensive burns have followed exposures, and without doubt a fair proportion of these cases might have been avoided.

An agent so powerful as this, which produces such wonderful results, must, indeed, be used with the exercise of proper care and consideration.

The accidents which have happened in the past are to-day to be avoided, with few exceptions. Early in the experimental stage of the development of the work, cutaneous burns, loss of hair, and lesions of varying intensity, while infrequent by comparison with the total number of exposures, did and still occur, and I believe were and are largely due to too long exposure of the body to the tube, and to inferior coil apparatus. With the improvement of apparatus and the Crookes tube, a short exposure, and removal of the body further from the influences of the tube, these accidents have become comparatively infrequent.

In the many hundred exposures that I have made I have yet to see a harmful effect from the static apparatus.

CHRONIC PROCTITIS.

By D. F. Talley, M.D.,
Birmingham, Ala.

Ancient history gives evidence of the existence of chronic proctitis before the birth of Christ. Aretæus, who lived about 200 B. C., wrote of intestinal ulcers produced by dysentery, and no doubt during all the succeeding generations chronic proctitis has claimed its share of victims. In point of reason, we must believe that in those times the people were more subject to all kinds of intestinal disorders than those of the present day, on account of their unhygienic surroundings, meagre provisions against cold, and the character of food used in the early days of civilization. We thus see that chronic proctitis enjoys a most respectable antiquity, and yet it has never, even to this day, received anything like the study and attention that its importance demands.

The great trouble has been that it was not, in all its forms, classed as a surgical disease, demanding surgical skill in its diagnosis and treatment. The inclination of the profession in general has been, and is yet to a great extent, to allow rectal disorders to run obscurely their course, and depend on nature for a cure. Of course, some medicine is always prescribed, but nearly always in this the mistake is made of punishing the stomach for the sins of the rectum, without in any way relieving the rectal trouble.

Fortunately for this class of sufferers, the days of treating disease blindly are fast waning, and it will not be long before doctors will more fully appreciate the great injustice they do, not only to their patients, but to themselves, by making care-

less and incorrect diagnoses and instituting irrational treatment. The nearer we treat the human body as the machinist treats his engine, by going direct to the disordered part to make repairs, the nearer we approach the true principle in the practice of medicine and surgery.

The diagnosis of a chronic rectal trouble should no longer be made under cover, but in the glare of the reflected rays of light. In making these examinations I use Kelly's proctoscope in nearly all cases. The long speculum is very useful in some cases, but the mucous membrane drops in between the blades or prongs in such a way as to obstruct the view, or contorts the lining of the rectum so as to make the examination unsatisfactory. It is also more painful, and the mucous membrane is often pinched.

In examinations with the proctoscope the mucous membrane closes uniformly over the open end of the instrument as it is withdrawn. The patient may be placed in the lithotomy or the knee-chest position. The latter is preferred when high examinations are to be made, as in this position the sigmoid flexure straightens itself as much as possible and allows the instrument to enter its fold. The instrument I use is nine inches long and one inch in diameter. It can be introduced with very little pain if well lubricated, when the operator is cautious and slow in introducing it. An assistant holds a bull's-eye lantern, or an electric light, over the patient's hips, and the rays are reflected into the rectum by a head-mirror. While the proctoscope is being withdrawn every part of the mucous membrane can be inspected.

Chronic proctitis may follow the acute condition, caused by either traumatism or some infection. Its first appearance may be of a subacute or chronic nature, this being the case especially when due to syphilis or tubercular infection. Passive pederasty is responsible for a large number of cases in some countries, but, as this disgusting and unnatural practice is not so prevalent in the United States as in France, it does not play such an important *rôle* with us. Gonorrhœa is a frequent cause among the demi-monde, as it is very easy for

pus from the vagina to run down over the anus and gain access to the rectum. This form of proctitis is not found in men unless they practice pederasty. The irritation produced by hardened feces in persons of constipated habit often leads to chronic proctitis. Inflammation surrounding a hemorrhoidal tumor where the mucous membrane is in a state of passive congestion may degenerate into this chronic trouble. In aggravated cases the mucous membrane becomes granular, tumefied, and ulcerated. In these cases the submucous cellular tissue is often invaded, and when the plastic material thrown out into its meshes becomes organized it contracts and causes a stenosing proctitis. We may also have an hypertrophy of the glandular structures and papillomatous vegetations appearing. Hence we have two varieties of non-specific chronic proctitis :

First, those cases in which a diffuse, persistent inflammation, superficial ulceration, and papillomatous vegetations are the prominent features.

Secondly, those in which the submucous tissues are principally involved in the hypertrophic process causing the proliferative stenosing proctitis. This latter condition is often engrafted on the first, and both conditions may coexist in any case.

In the first class of cases ulcerations are rather common, and these ulcers are usually in the lower rectum. This condition follows very readily the acute inflammation, from any cause, in a chronically congested rectum in parties whose power of resistance has been weakened by any cachexia.

The main symptom of this form of proctitis is slight tenesmus, with frequent muco-purulent stools, being at times streaked with blood ; indeed, in some cases a large quantity of blood is constantly in the discharges, and forms the most prominent feature of the case. The sphincter muscle becomes so relaxed in some cases as to cause fecal incontinence. The patient becomes weak and very much emaciated. Unless the inflammation involve the mucous membrane encircled by the sphincter the patient will experience very little acute pain;

however, there is usually a feeling of extreme discomfort in the rectum. When these symptoms have existed for a number of weeks or months you may be sure that your patient is suffering with some form of chronic proctitis, and a thorough examination should be made at once. A digital examination may reveal the presence of ulcers when situated low in the rectum; however, this should not satisfy the physician, even if it be a fact that a majority of ulcers are within reach of the finger. The entire rectum should be thoroughly inspected in every case, and to do this it is necessary to use the proctoscope. It should be remembered that the mucous membrane of the rectum has, normally, rather a congested appearance, and when healthy may be mistaken for disease if compared with mucous membrane of other parts of the body. Rest in the recumbent position is of paramount importance in the treatment of this form of proctitis. The diet should be of a liquid character, bland and nutritious. It is usually a difficult matter to properly diet your patient unless he be placed in an infirmary and carefully watched, for if treated at home, when he beigns to improve and becomes very hungry, some improper food will be given, in spite of your directions. It is best in most cases to divulse the sphincter muscle, especially when the trouble is low in the rectum. When this is done the patient's bowels should first be thoroughly emptied with an aperient and the rectum washed out with a solution of boric acid; then the patient is anæsthetized and the muscle paralyzed. After this the rectum is thoroughly inspected and any ulcers discovered touched with a solution of nitrate of silver (forty to sixty grains to the ounce). Where there is no ulceration, but a diffuse chronic inflammation, the mucous membrane should be mopped with silver or copper of the strength of thirty grains to the ounce. The after-treatment consists in putting the patient to bed, washing rectum daily with warm boric-acid solution, and the use of suppositories of iodoform and boric acid. A very useful injection in this condition is sweet oil and iodoform, seven grains to the ounce, a tablespoonful to be injected at bedtime. These injections

should be given with the hips elevated, to prevent the oil from passing out.

In very chronic cases where the ulcers are extremely indolent the solid stick of silver or crystal of copper may be used. In these cases it is necessary to make repeated applications before the ulcers become healthy and begin to heal.

It is stated by some authorities that we never find chronic proctitis in children. I cannot agree with this statement, as a case came under my care a few years since in a boy four years of age. He had been passing considerable blood every time he went to stool for twelve months, averaging four or five stools daily. I had him anæsthetized, divulsed the sphincter, and examined the rectum as thoroughly as I could with a speculum. The mucous membrane was intensely red and granular. I applied freely a solution of silver (thirty grains to the ounce) over a surface somewhat larger than a silver dollar. The after-treatment consisted of washing the rectum with a warm boric-acid solution, and the injecting of a tablespoonful of sweet oil with three grains of iodoform at bedtime. This little patient was much better the day after the operation, when he passed very little blood. From that time on he steadily improved, and in six weeks was perfectly well. This was over two years ago, and he has had no recurrence of the trouble. During the twelve months he suffered he was continually taking medicine with no relief. In very sluggish ulcers it is well to scarify or curette them before any application is made. Some works recommend enemata of starch-water and laudanum to relieve pain, but in my experience where much pain exists it is due to some trouble in the sphincteric area, and is promptly and permanently relieved by divulsion of the sphincter muscle. I do not favor any medication of the rectum except that which is stimulating, antiseptic, or cleansing. In extreme cases, where the above treatment fails to cure and the disease is situated just above the sphincter, involving only a small area, it may be excised and the healthy membrane brought down and stitched to the skin at the anal margin, just as it is in Whitehead's operation

for hemorrhoids. Papillomatous vegetations should be destroyed by chromic acid or the thermo-cautery. When they are high in the rectum and cannot be reached with the speculum, the authorities advise splitting the rectum and anus back through the median line to the coccyx, to gain access to the trouble; but I believe we will probably never have a case that cannot be effectually treated through the proctoscope. Very rarely a case may present with a tumor too large to be treated in this way.

The main feature of the proliferative stenosing proctitis is the involvement of the submucous connective tissue in a fibrous hyperplastic process which causes a thickening of the rectal walls and subsequent contraction and stenosis of the rectum. In this variety all the normal structures of the rectum are matted and fused together, the normal endothelium is changed, and the glands become atrophied. In some cases the inflammatory process extends into the perirectal tissues.

The lower half of the rectum is usually the seat of trouble, and in most cases it does not extend more than one or two inches above the sphincter muscle. There is rarely more than one point of extreme contraction, and there may be a chronic superficial ulcerative proctitis both above and below the constriction. The lumen of this stricture may become very small, but rarely closes entirely, as the passing of feces keeps up a certain amount of dilatation. This form of proctitis usually follows and is a late stage of the chronic ulcerative variety.

For the deep tissues to become affected it is not necessary for these ulcerations to be extensive, but just sufficiently large to admit the infection. In some of these cases we get a history of syphilis, but in none of them have I been able to cause any absorption or disappearance of the inflammatory products by administering antisyphilitic treatment. So it appears that if the primary lesion was of a syphilitic nature it only acted as a simple ulcer in opening up the structures of the bowel to deep infection. An inflammatory thickening of the rectal wall, due to tubercular infection, is usually accom-

panied by extensive tubercular ulcerations and evidences in other parts of the body of tuberculosis.

A patient suffering with stenosing proctitis will notice an increasing difficulty in defecation. In the morning there is often a feeling of urgent necessity to evacuate the bowels, but when he goes to stool he strains long and accomplishes little, and does not experience that relief which follows a thorough evacuation. He frequently passes little hard balls of fecal matter, and when the constriction is low, the mould of the fecal mass will somewhat resemble a lead-pencil or a small tape. In this condition it is very easy for obstruction to occur from a blocking of the small passage with hardened feces. More can be learned of this condition by digital examination than any other way. Instruments cannot be used on account of the constriction. By the finger you can distinguish a diffused thickening of the rectal walls with a constriction in many cases which will not allow it to pass. Strictures due to the healing of ulcers have a different feeling; they are irregular, and sharp bands project into the bowel. Carcinoma of the rectum may be eliminated by the history of the case.

This stenosed condition of the rectum never recedes spontaneously, nor is it benefited by any internal medication. It may be treated by palliative means or dealt with in a radical way. The best palliative method is to dilate as much as possible with elastic bougies and continue to pass them, at intervals, indefinitely. The Wales bougie is to be preferred, as it is hollow, and water may pass through while it is being introduced, to press the mucous folds out of the way and keep the instrument from catching in them. These bougies should not be passed oftener than every five days.

When the stricture is very resistant an internal proctotomy should be performed to facilitate dilatation. There is little danger in this operation when the stricture is not more than two inches above the sphincter muscle. After internal proctotomy it is generally advisable to forcibly divulse the stricture with an instrument made especially for the purpose.

Even after the latter procedure it is a good plan to pass soft-rubber bougies occasionally to avoid a recurrence of the stenosis.

DISCUSSION.

Dr. Howard A. Kelly, of Baltimore, Md.—I have listened to Dr. Talley's paper on proctitis with a good deal of interest, and I thank him for bringing the subject before us. There are a great many unrecognized cases coming under my observation frequently, both as disease of the rectum *per se*, and still more frequently I see the milder, subacute form of rectal trouble complicating various pelvic conditions. As gynecologists, who have in view the major lesions of the pelvic viscera, we are apt to ignore the rectal condition, and yet it is one which causes patients sometimes a great deal of annoyance. The sense of fulness, of bearing down, and particularly the distressing sensations which are often associated with accumulation of mucus in the ampulla before it is discharged, and the distressing weakness which comes after evacuation, are hard to account for. The first thing the gynecologist should consider is that the rectum is a part of his routine examination of the pelvis. The principal thing in a rectal examination is to know how to make it. It seems extraordinary, but away back in the time of Sims, and in such an old book as Allingham's, the suggestion was made as to the possibility of examining the rectum in the knee-chest position with a Sims' speculum. Dr. Carpenter, of Stanford, cites a case in which he used the same procedure for treating disease high up in the bowel. Dr. Otis, of Leipsic, wrote quite an elaborate paper describing some interesting scientific experiments he made on the cadaver, on the distention of the bowel in the knee-chest position, and yet all these plain hints failed to make any impression.

By putting the patient in the knee-chest position a cylindrical speculum of good calibre can be introduced into the rectum and the bowel thoroughly examined. I have about twenty of these speculums of different sizes. I have small ones, which will admit the index finger, up to those four or five centimetres in diameter. I have short ones for the sphincter area and ampulla, and long

ones to push up in the colon. By this means one can examine all parts of the lower bowel and ascertain the area which is affected in cases of proctitis. I find it is usually located in the ampullar area. One can see through the speculum the more or less uniformly intensely reddened congested mucosa. It looks puffy and loses the gloss of the healthy mucosa, and is uniformly red. Large vessels which ordinarily stand out with perfect distinctness, like the channels of a river, marking out healthy territories between, are more or less concealed. The process sometimes proceeds to the formation of superficial ulcers. These ulcers may heal and recur at intervals. All these conditions are easily diagnosticated.

The treatment consists in paying attention to four things. First, to carefully restrict the diet, which I will not dwell upon now. Secondly, washing out the lower bowel with bland substances, preventing the accumulation of any feces there. Thirdly, as a preliminary to beginning treatment, there should be thorough dilatation of the sphincter. Fourth, various applications to the inflamed surface, such as solutions and powders. I find one of the best a pledget of cotton saturated with a solution of ichthyol (5 per cent.) in gelatine, left in the ampulla, to be discharged when the bowels are moved. I have also used a rubber balloon inserted and inflated with ichthyol and gelatine in the bowel. These may be left in from a quarter to half an hour. With these plans of treatment cases which are sometimes obstinate generally in time make a very satisfactory recovery. I hope Dr. Talley's paper calling attention to this matter will be the beginning of some new, intelligent, and discriminating work along these important lines.

Dr. Joseph M. Mathews, of Louisville, Ky.—This subject is a very interesting one to me, as I have been engaged in this work for twenty years, and it occurred to me, while the doctor was reading his paper and while Dr. Kelly was speaking, that it is a very remarkable fact that people pursuing the same line cannot come to the same conclusions nor see the same class of cases. The paper, I believe, was on proctitis, or inflammation of the rectum. While I was listening to the remarks of Dr. Kelly I was in hopes that he would dwell upon the causes of proctitis that he so frequently meets. I did not hear the reader of the paper speak of the causes of proctitis which he so often met. I

must say, after an experience of twenty years, that I believe the few cases of benign proctitis I have seen I could name on my fingers. I do not mean to say that the rectum cannot be inflamed or ulcerated from benign causes. I wish distinctly to say that, because I have been criticised in the past upon this subject, but I believe the cases are infrequent. When it comes to ulceration following proctitis, I believe that an irritable ulcer can be produced around the sphincter muscles by the passage of hard fæces, etc.; but finding the ulcer *above* the sphincter muscle, as Dr. Kelly says, or as the reader of the paper has said, where we find well-defined, indurated ulcers with hard edges, that they should be cut through, scarified, curetted, etc., I never find them. What, then, are the causes of proctitis? The writer cites a case in detail. We can imagine having a case of chronic proctitis which might possibly produce a diarrhœa or something of that kind, which leaves the rectum in a congested condition that will pass off of itself after a little time; but an inflammatory action, with plasma thrown out in the walls, constituting a true condition of inflammation, what benign causes can produce it in the rectum? Nature has made a pouch with such thickened membranes as admirably adapt it to its office of defecation. I know it has been said that ulceration followed by stricture is frequently found as the result of dysentery. For the sake of argument I will admit it, though my experience has taught me that it is not true. Therefore I would say that the causes of a proctitis or an inflammatory action in the rectum must be either benign or malignant, cancer, tubercle, or syphilis. When I dared to record my experience in this matter, to the effect that over 50 per cent. were due to syphilis, it caused a good deal of comment from even my most intimate friends. I am glad to say that a decade has brought me the testimony of hundreds of physicians in the United States and Europe testifying to this fact. If I find a proctitis, what would be called by the reader of the paper a chronic proctitis, an inflammatory condition of the rectum, I would look for some other cause than a benign one. If I find the character of ulceration as described by the reader and Dr. Kelly, I certainly *then* would seek for a cause that was not benign. In other words, if you find in the rectal pouch well-defined ulcers, with hardened or indurated edges and a base, they are not benign. I believe that by following out the history of such a case you will find it

is due to one of three other causes, namely, cancer, tubercle, or syphilis, and in the majority of cases it will be syphilis. I do not think it is difficult to detect pathological conditions in the rectum. I think an ordinary speculum, five or six or seven inches long, will detect any trouble in the rectum. But gentlemen of experience will say that they need no speculum to detect trouble in the rectum. Mr. Allingham once said to me that he never used a speculum once in fifty times, because the educated finger will reveal the whole pathology.

Dr. Kelly speaks of his method of examining the rectum. The best way to examine it is with the finger. There is no pathological condition known to the rectum that may not be detected by the educated finger. Dr. Kelly then tells us to examine, what? Not the rectum. Dr. Kelly's effort is a good one, and we are indebted to him for his investigations to examine beyond the rectum; to examine the sigmoid flexure. Dr. Kelly has had a vast experience in the treatment of disease. We all know his work and eminence; we all know his researches and investigations, and how much we are indebted to him. But I want you to bear with me a moment while I say a word or two with reference to exploration of the sigmoid flexure. It requires an instrument twelve inches long, made of solid material—steel, brass, or what you please—and a straight one at that. I say that it requires an expert—and I am not yet an expert—to introduce such an instrument into the sigmoid flexure. There are dangers attending the introduction of this instrument into the bowel. Why? First, from anatomical reasons. The rectum is not a straight tube by any means, and such an instrument placed in the hands of men who do not know its anatomy, to be introduced into the sigmoid flexure, would be dangerous. In the second place, we are to presume that when we use the instrument we are using it for a pathological condition, expecting to find disease in the sigmoid flexure. If you attempt any force with an instrument of that kind in introducing it into a pathological structure, what is going to be the result? I have no doubt that Dr. Kelly's instrument works admirably in his hands. I saw him use it a short time after he gave it to the profession, and he did it expertly, beautifully, and showed the inside of the sigmoid flexure. But, I say, for every other man to do the same there is danger. I will verify my statement. In the city of Louis-

ville, one of our surgeons a short time ago undertook to introduce this instrument into the sigmoid flexure of an apparently healthy man. There was nothing specially the matter, except the surgeon suspected he might have some inflammation or ulceration in the sigmoid flexure, and he ran the instrument of Dr. Kelly into the peritoneal cavity, the result being that the intestines came down. Laparotomy was performed at once, but the man died in a few days. That man was not an expert with the tube perhaps, but he is a good surgeon. Therefore, such a method in the hands of those who are not skilful in the use of the instrument is fraught with danger.

As to the treatment of this condition, I claim that if there is disease in the sigmoid flexure, inflammation, ulceration, or what not, the physical evidences or the clinical aspects of the case will betray to any physician that there is disease there, and if he will watch the discharges he can tell what manner of disease it is. If there is an inflammatory condition in the sigmoid flexure, instead of looking into it, all I want to know is the patient's symptoms and to see the discharges. If there is an ulceration of the mucous membrane there will be pus, mucus, and blood. If there is no pus it does not amount to a great deal. There may be an inflammatory action simply.

The treatment laid down by the doctor in his paper is admirable—wash it out. You can take a soft instrument or bougie which will go to the sigmoid flexure, and you can cleanse the parts, as you would an inflammatory condition anywhere else, with boric acid; then use sweet oil or almond oil, iodoform, and bismuth. I recall the case of a patient who was discharged from my infirmary in four weeks. In this case there was a discharge of blood and mucus five or six times a day. I had evidence on examining the rectum that the disease was not there; the sigmoid flexure or colon was at fault, and under the treatment the doctor speaks of the patient was discharged absolutely well, having one normal evacuation every day. It was not necessary to look into the sigmoid flexure to know that the trouble was there at all. I want to make the point that if there does exist proctitis, as described by the doctor, or an inflammatory action that has existed for any length of time, associated with an ulcerated condition, we must disregard benign causes. If you do not, the disease with which the man is affected will get ahead of you

and certainly get ahead of him. He may be tuberculous, and you must get in your treatment as rapidly as you can. If it is malignant, excision must be done as quick as possible.

Dr. Jelks, of Hot Springs, Ark.—If there was tuberculosis, what would you do?

Dr. Mathews.—If the man had tuberculosis of the rectum, and it was within reach, I would make, as in other cases of malignancy, a free excision or curette as thoroughly as possible, because very likely the tuberculosis will extend.

Dr. Jelks.—What are the statistics following such treatment?

Dr. Mathews.—Very good, doctor.

Dr. K. W. Millican, of St. Louis, Mo. (by invitation).—I have not had an extensive experience with rectal troubles or proctitis in particular. Probably my experience, as I recall it, is limited to five or six cases, and three of these have a distinct bearing upon the remarks of Dr. Mathews regarding excision. He enumerated benign, malignant, tuberculous, and syphilitic diseases of the rectum. The three cases that came under my notice in London were married women. On investigation I found that in each case there had been connection by the husband in the rectum. Two of them had intercourse in this way for the purpose of avoiding pregnancy. In the third case the husband, whom I knew personally, was at the time suffering from gonorrhœa, and he was under the impression that by having connection in this way it would be impossible to infect his wife, and so he had taken this method of intercourse. This is a very important point to bear in mind in chronic proctitis. It is not to be forgotten that proctitis may be the result of gonorrhœal infection.

Dr. James T. Jelks.—I have seen a great many cases of disease of the rectum, and from the investigations I have made I am thoroughly convinced that we can find out the cause. My experience has taught me that we have, as Dr. Mathews has said, malignant disease of the rectum, syphilis of the rectum, and I have seen a few cases of gonorrhœal inflammation of the rectum. I have never seen a case of ulceration of the rectum that remained after dysentery. We are not in the habit of investigating these cases sufficiently. We take it for granted that the man has got an inflammation of the rectum; we make

some applications through an ordinary speculum, and we fail in our results.

I have been pleased with Dr. Kelly's instrument for examining the rectum. If we take the discharges and make a microscopical examination, and find out what the cause of the trouble is, it is then an easy matter to treat it. If we have a tuberculous ulcer, we will get tubercle bacilli. If we have a gonorrhœal inflammation of the rectum, we will get the gonococcus, and then we have left only syphilis. Of course, we can make a diagnosis of malignant disease of the rectum, and we can make a diagnosis of syphilis by excluding gonorrhœa and tuberculosis. My observation has been that Dr. Mathews is correct in the statement that 50 per cent. of the cases are due to syphilis. If the trouble should be syphilitic there is but one line of treatment. After the ulcer is healed we will have to continue the treatment Dr. Talley has mentioned of the stricture, which of necessity must form. Dilatation and proctotomy are the only remedies we know for that purpose. I wish to emphasize the fact that the majority of these cases are syphilitic in their nature.

Dr. Talley (closing the discussion).—I wish to thank Drs. Kelly and Mathews for their remarks. I expected to be walked all over by Dr. Mathews, because I knew his opinions on this subject before he began to speak. I have read his work more carefully than any other book on rectal diseases. I knew he held the opinion that we have very little inflammation of the rectum of a chronic nature except that produced by syphilis, tuberculosis, and cancer. However, there are so many cases that we come across where we can get no evidence of any of these troubles, and can produce no effect on them by syphilitic treatment, we are bound to come to the conclusion that a number of such cases are due to non-specific causes. Of course, Dr. Mathews' experience is worth a great deal. He is able to make statistics, because he has treated such a large number of cases and has been engaged in rectal work so long. While I have a great deal of respect for his opinion, I am inclined to believe there are more cases due to simple causes than he thinks. I believe the cases coming under his observation have been more attributable to syphilis, cancer, and specific causes than those coming under the observation of other surgeons.

As to the treatment, Dr. Mathews agrees with me. After all,

our principal object is to treat a patient and get him well. It is interesting in all cases to know and, especially if they are syphilitic cases, to put them on anti-syphilitic treatment. If they are cancerous, excision should be performed. But in the other cases I spoke of, apparently benign, the patients went on and recovered without syphilitic treatment and without excision. And this goes to prove that they were neither syphilitic nor cancerous.

THE SOURCES AND DIAGNOSIS OF PYURIA.

By Howard A. Kelly, M.D.,
Baltimore, Md.

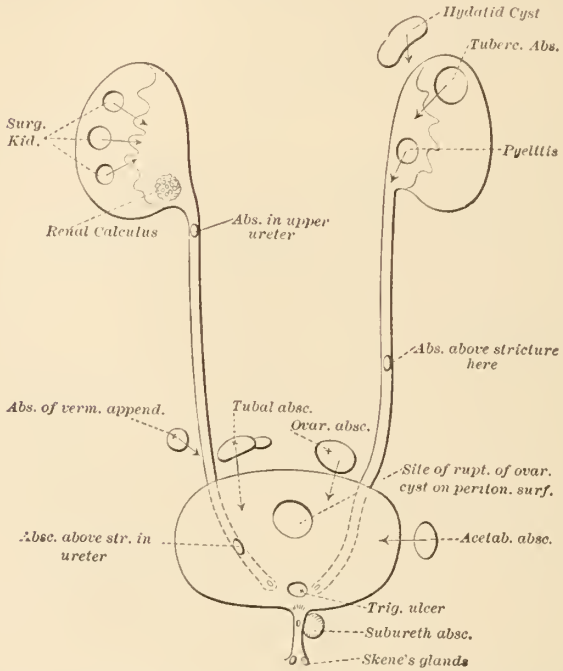
If I were asked what subject of all others in the range of medicine I considered it most important to bring prominently before the profession at this juncture of the advancement of our art, I think I would reply, on the spur of the moment, pyuria. Let me emphasize the importance of my subject by saying that there are to-day thousands of women in our country going about with a pyuria of undetermined origin; that in most instances the disease is progressive, going from bad to worse, and for this reason valuable time is being lost; and that the investigation of the source of a pyuria is not difficult to make, simply requiring some special instruments and a little practice in using them. It is my desire to speak to you briefly of the methods at our command for investigating and tracing a pyuria to its source, of determining the point at which the pus enters the urine, its cause, and the extent of the involvement of the urinary tract.

Pyuria signifies nothing more nor less than the presence of pus in the urine, a sign common to a variety of affections of the urinary passages. It is, therefore, but a symptom of an involvement of some portion of the urinary system, from the external urethral orifice up to the capsule of the kidneys.

The investigation of the cause of a pyuria must be *analytic*, taking the symptom and tracing it to its source by a process of exclusion. This is the natural procedure in the routine investigation of most diseases. Your patient comes to you with a more or less definite complaint of a disturbance along

the urinary tract, often exceedingly vague, and you examine the urine and find that it contains pus, you then naturally conclude that if you can find the source of the pus you will locate the disease. While the question presents itself in this

Fig. 1.

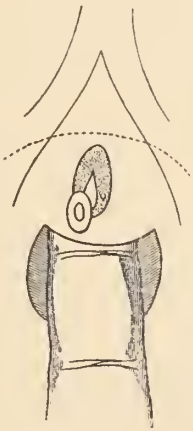


Showing a number of the sources of pyuria, from the extreme lower urinary tract up to the area surrounding the kidney. The circles indicate the location of the abscess and the arrows the direction in which the abscess discharges. The character of the abscess is described on the diagram.

way, the means which we have hitherto had at our command for making such a determination have been generally most unsatisfactory. If an enlargement is not found in the loin suggesting a kidney containing pus, or if a point of tenderness is not found somewhere along the accessible part of the urinary tract, how is it to be determined where the pus comes from? Moreover, the clinical signs themselves may be most

misleading; for a stone in the kidney or a tuberculous kidney may give no other sign than a vesical tenesmus; and then, too, if both kidney and bladder are inflamed, how is one to ascertain this fact and to determine the extent of the involvement of each? The question, as it stands to-day, with better means of investigation at our command which are neglected,

Fig. 2.



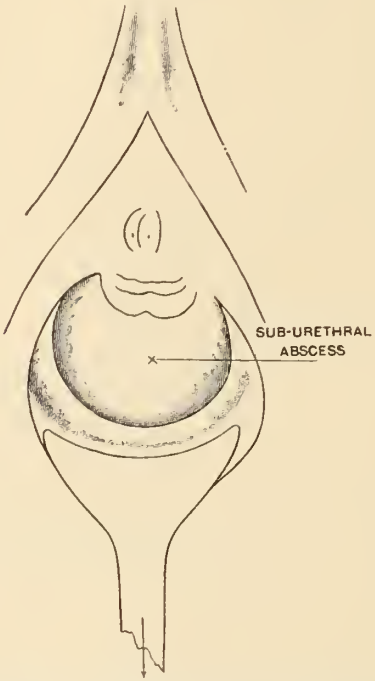
Showing the finger in the act of expressing a drop of pus from Skene's gland on the right side. The index-finger is introduced within the vagina and engaged in compressing the ureter up under the symphysis pubis, which is represented by a dotted line. The direction of the pressure is from above downward.

is much as if a man should come to you complaining of a sore throat and purulent expectoration, and you should try to determine the exact location and extent of the malady by a series of questions and by looking at the sputum, without once asking him to open his mouth, and thus looking down his throat, seeing exactly what is wrong. It is my desire, therefore, to emphasize the importance of the direct methods of inquiring into the sources of pus in the urine, and I shall, for this reason, but briefly refer to the other accessory diagnostic procedures at our command.

The history of the case must be carefully considered, and the duration of the disease, the exact character and location of

the pain, the frequency of urination, the existence of morbid processes elsewhere, such as phthisis, etc., must be noted. The microscopic characteristics of the urine are of the utmost importance, as the quantity of pus present, variation in the amount, the character of the pus-corpuscles themselves, the

FIG. 3.



Showing the appearance of a suburethral abscess occupying the anterior wall of the vagina. The abscess is exposed by retracting the posterior vaginal wall.

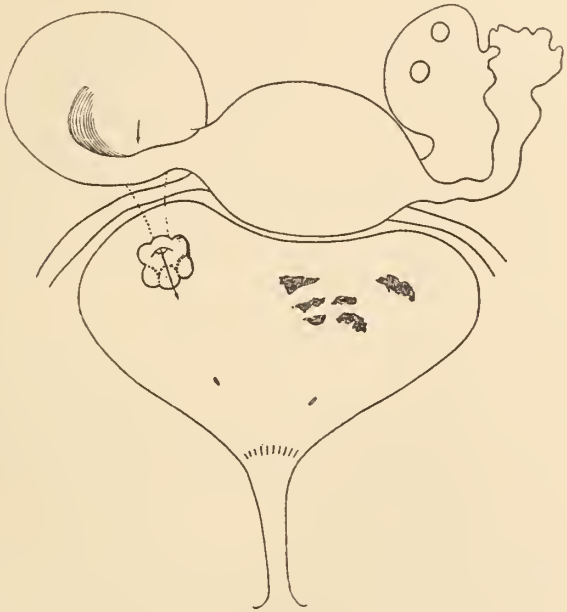
presence of blood crystals or cellular débris in the urine are all factors liable to afford a clue to the source of the pus.

An infection is almost always the basis of a pyuria, and this may be due to any one of the pus-producing organisms. A scientific investigation will aim to determine which one of a large number of such organisms is present. Such a determination is not without a high degree of practical importance, as some of them exhibit a marked predilection for a special

portal of entry; the gonococcus, for example, enters the urinary tract by the urethra, and the colon bacillus is more apt to be an invader from a neighboring bowel.

Pyurias may differ in the following ways: In the quantity of pus; in the reaction of the urine, which may be alkaline or

FIG. 4.



Showing the avenue of entrance of a right tubo-ovarian abscess through the base of the broad ligament into the bladder at its right horn. The vesical opening is surrounded by tits of swollen mucosa. The left side of the bladder illustrates the localized patchy appearance of a cystitis.

acid; whether or not pus is constantly present, and whether it varies in quantity at different times. A little pus, found microscopically, associated with an irritable bladder, may mean nothing more than a hyperæmia of the vesical trigonum or a ureter which is irritated by a concentrated or an intensely acid urine; a large amount of pus almost invariably proceeds from the kidney. Renal pus is usually acid, while pus from the bladder walls is often strongly alkaline; an intermittent

or remittent flow of pus is most likely to come from an extra-vesical source, either from a kidney or an outside suppurating area communicating with the urinary tract.

In investigating a pyuria, we should always bear in mind that it may originate in one of two ways: either in a diseased condition of some portion of the urinary tract itself, or it may depend for its continuance upon a disease located outside the urinary tract and simply discharging through it as an avenue of exit from the body. The principal portals of entry for such an affection are by the pelvis of the kidney and by the bladder, in the vast majority of cases by the latter (Fig. 1).

Let us now see what we can do to clear up a diagnosis by a direct examination, which, in order that it may be complete, must pass in review the possible diseased conditions of the entire urinary tract from the external urethral orifice to the kidney, as well as the contiguous structures as far as they are accessible. I can, perhaps, best illustrate what I wish to inculcate by citing typical cases from my practice, proceeding in our investigation in an anatomical order from below upward.

URETHRA. To begin with, the urethra furnishes three possible sources from which pus may enter the urine: (1) Skene's ducts; (2) a urethritis or ulcer of the urethra; (3) a sub-urethral abscess.

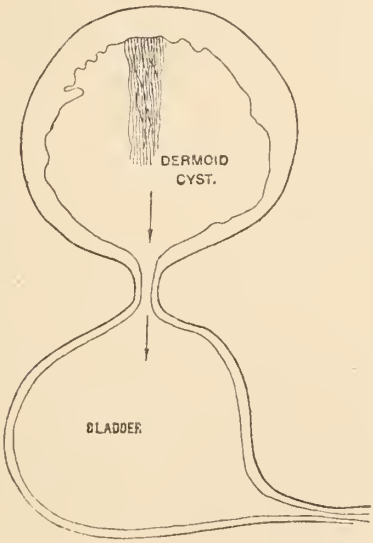
A small amount of pus, a drop or two, lodged in Skene's glands, may easily escape observation unless it is made a part of the routine of every examination to milk them out by pressing first one side, then the other, up under the pubic arch and squeezing downward and outward. A drop of thick yellow pus may exude from the external orifice of the gland or duct of the side from which it originates. The diagram (Fig. 2) serves to illustrate one of my cases in which this condition existed unsuspected.

A urethritis or a urethral ulcer will also afford a source of pus-contamination of the urine, which is easily detected by using a two-glass test in passing the urine; the first urine escaping brings with it the pus, and consequently that which follows will be clear. The inflamed ulcerated urethra is

readily observed through the cystoscope as it is withdrawn. One of the most marked cases of this kind I ever had was due to a gonorrhœal ulcer of the posterior wall near the neck of the bladder where Littré's glands are found.

A suburethral abscess (Fig. 3) is a rare but most interesting condition, and one which is easily overlooked. This is

FIG. 5.



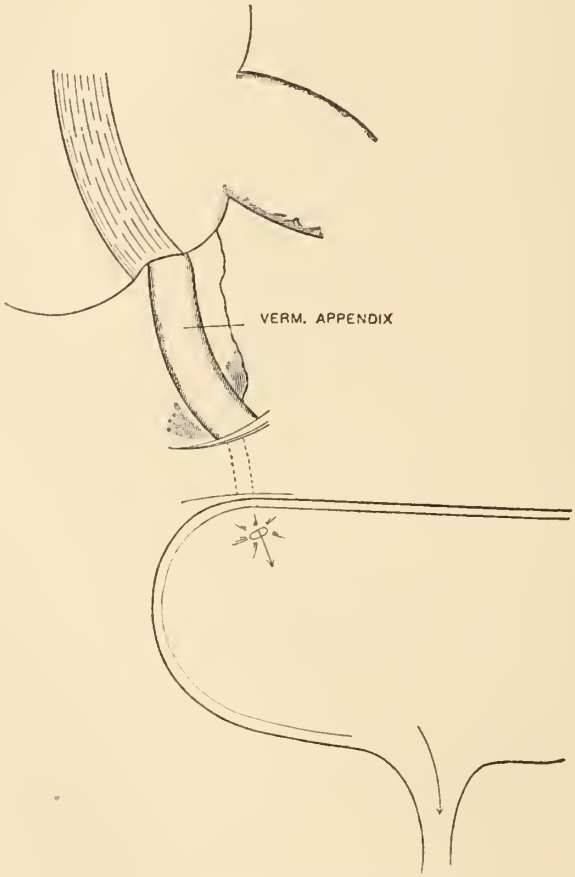
Showing a dermoid cyst adherent to the peritoneal surface of the bladder, suppurating, and discharging by a sinus into the bladder.

the only source of urethral contamination which occasionally yields considerable quantities of pus. Two cases of this kind have passed through my hands, in both of which there was a little pouch projecting into the anterior vaginal wall, which was not otherwise altered in appearance. This pouch was full of pus, and communicated by a slit with the posterior wall of the urethra, into which it intermittently discharged a teaspoonful or more of pus. Through the urethroscope I could see the slit and introduce a probe which could be felt in the bottom of the sac.

Bladder. The vesical sources of pyuria are three in number: (1) cystitis and trigonitis, (2) foreign body, and (3) ulcer.

All of these various affections may readily be diagnosticated by examining the bladder through a simple cylindrical

Fig. 6.

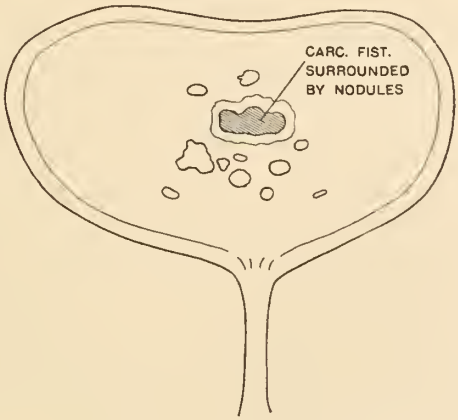


Showing an abscess of the vermiform appendix discharging by a fistulous orifice into the bladder.

cystoscope, with the patient in the knee-chest posture, under which condition the bladder becomes distended with air. A

small electric headlight or an electric light is held close to the sacrum and the rays reflected by an ordinary head-mirror into the bladder, when this viscus may easily be examined. I wish to call particular attention to the fact that it is important, in order that the base of the bladder may be satisfactorily inspected, to let air into the vagina before dilating the bladder. This brings the floor of the bladder almost into the plane of vision, and makes the trigonum easily accessible. Ulcers are most apt to be found here, and an inflammation localized in this neighborhood—a trigonitis—is the commonest form of localized cystitis.

Fig. 7.



Showing a carcinomatous fistula at the base of the bladder surrounded by secondary nodules.

Extravesical Sources of Pyuria. There are several extravesical sources of pyuria, the commonest being those connected with inflammatory diseases of the Fallopian tubes, of which I have observed a number of instances. In one of my cases (Fig. 4) a small tuberculous abscess broke into the right horn of the bladder near the base of the broad ligament, while all the rest of the urinary tract remained unaffected. I discovered its presence by means of the red mammillated œdematous mucosa surrounding the concealed opening, from which,

during examination, a bubble of air escaped, and when I introduced a searcher at this point its withdrawal was followed by the escape of pus. A rarer avenue of entrance is by the adhesion of a suppurating tumor to the free peritoneal surface of the bladder, subsequent to which perforation occurs. A case of this kind came into my hands a year ago through her brother, a prominent physician in New York State. The diagnosis of a tuberculous kidney had been made, but I was able to relieve the extensive pyuria at once by removing a dermoid cyst attached to the vault of the bladder, and dissecting out and closing by suture the long sinus of communication between the tumor and the bladder (Fig. 5).

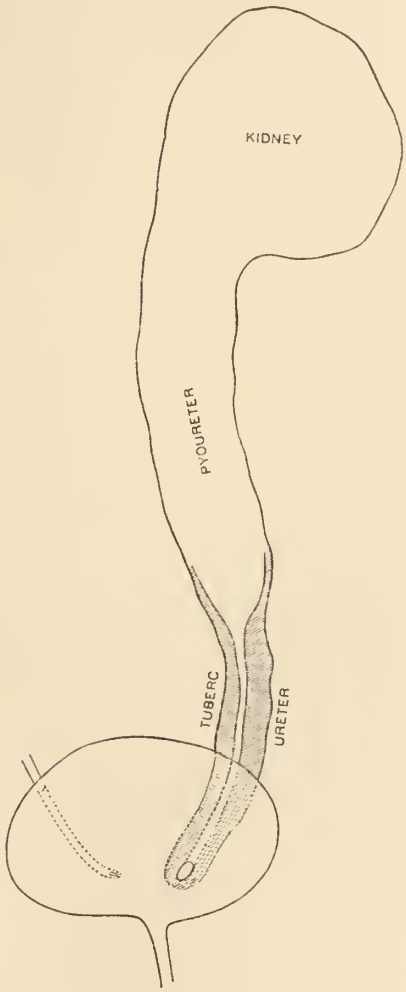
Let me also illustrate these extravesical sources of pyuria by citing a brief history of the following case, in which the cause operated from the vagina: My patient had an atresia of the vagina. I found embedded in the perivaginal tissues the stem of a hard-rubber stem-cup pessary, the cup of which lay concealed in the upper part of the vagina above the atresia, where it had eroded a little opening into the base of the bladder, through which a quantity of fetid pus was constantly discharged with the urine.

I shall not pause longer to dwell upon examples of abscess originating in extra-uterine pregnancy, or acetabular or psoas abscess, or an abscess from the vermiform appendix, also emptying in this way (Fig. 6), or the intense cystitis evoked by an intestinal fistula, or a carcinoma extending from the uterus.

THE URETERS. If a direct examination and analysis of the evidence presented does not reveal a source of the pus in the lower urinary tract, the whole upper urinary tract still remains to be investigated. May the source, and often the nature of a pyuria originating in a ureter, pelvis of the kidney, or the kidney itself, be easily determined? This may be accomplished with facility in two ways, both of which depend upon the fact that the turning of the vesical speculum about thirty degrees to the right or to the left, and dropping

the handle so as to bring the floor of the bladder into view, will readily afford a good view of a ureteral orifice.

FIG. 8.

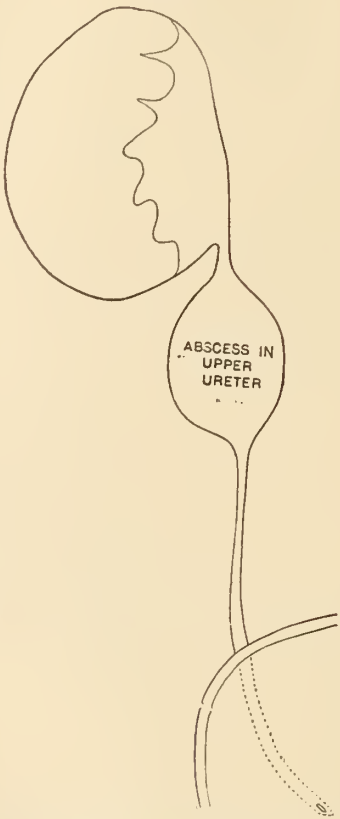


Showing a tuberculous strictured left ureter with a pyo-ureter and pyelonephrosis above the stricture.

Too much has been said about the difficulty of doing this. It is not difficult; it only requires practice. I have just said

that there are two ways of locating the source of a pyuria above the bladder. When an abscess breaks through into this viscus from any of the extravesical sources just pointed out, the opening through which it discharges is always plainly indicated by an area of intense congestion; in like manner,

FIG. 9.

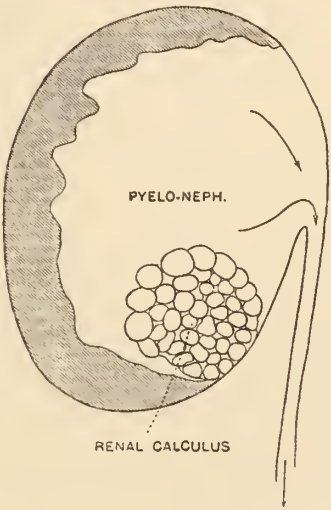


Showing an abscess in the upper part of the ureter just below the pelvis of the kidney.

when the pus comes down one of the ureters into the bladder, in many instances, the ureteral orifice of that side is intensely reddened, mammillated, or even ulcerated. The second way consists in determining at just what point in the upper urinary

tract the infection is located, by passing ureteral or renal catheters, so as to investigate the entire length of the ureter and the pelvis of the kidney. I have located in this way the source of a pyuria in a pyo-ureter due to a gonorrhœal stricture at its vesical end, and when I succeeded in passing a metal catheter through the tortuous stricture, 150 cubic centimetres of pus at once escaped. I have located the infection in a tuberculous pyo-ureter where the pus had accumulated above a stricture near the brim of the pelvis (Fig. 8). I

FIG. 10.



Showing a pyelonephrosis with compression and thinning out of the renal substance due to the presence of a renal calculus. The ureter enters the kidney at an acute angle, as often found in simple pyelonephrosis.

located another in a pocket above a stricture in the upper third of the ureter (Fig. 9), and the patient recovered after its evacuation and the dilatation of the stricture.

RENAL PYURIA. Finally, we have to distinugish, in the absence of any source of contamination below, those pyurias (a large group) which have their origin in the pelvis of the kidney, usually associated with an obstruction at the renal opening of the ureter, causing the pus to dam up in consider-

able quantities. This obstruction may be due to a catarrhal puffy mucosa of the renal pelvis, or to an oblique entrance of the ureter into the pelvis, causing its compression as the latter distends, or to a rotation of the kidney, which twists the ureter, or to the obstruction caused by a stone or a new growth which plugs the orifice, or to the fact that the pus is too thick to escape readily down the small ureteral channel. The source of the pus may be readily distinguished by passing a long renal catheter, which enters the pelvis of the kidney and permits of its slow escape. If the pus is too thick to run out of the narrow lumen of the catheter, it may be sufficiently thinned by injecting some boric-acid solution, and in some cases even assisting the mixture of the fluids by manipulating a large kidney between two hands. By repeated washings in this way all the pus will be evacuated.

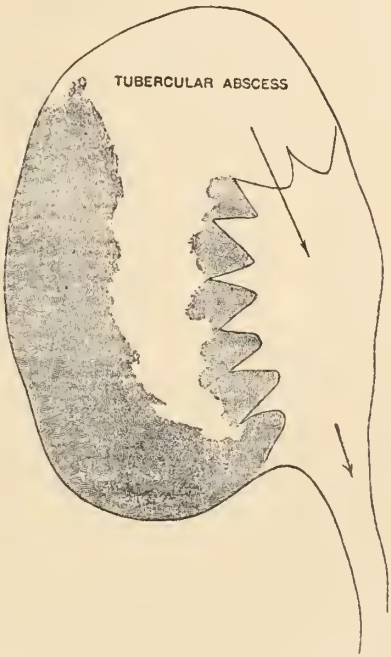
The nature of a pyelitis of this sort must be determined by a bacteriologic examination of the pus, by an investigation of the history, to determine whether the patient has had any previous hydronephrosis, and by a further examination to detect the presence of a calculus. I find that some cases of intermittent pyonephrosis are due to the unsuspected existence of a hydronephrosis of a low grade, the pelvis of the kidney containing at the utmost not more than from ten to twenty cubic centimetres of fluid. Following some undetermined cause or an attack of grippe, or other depressing illness, the patient has a chill, followed by high fever and general aching with more or less pain in the loins, associated with the appearance of pus in the urine. After washing out the kidney the symptoms all subside, but a simple hydronephrosis remains.

When there is a stone in the kidney (Fig. 10) the use of the catheter may bring down a little black débris, which sinks to the bottom of the vessel, and should always be looked for. A bit of the stone may stick in the eye of the catheter, or, best of all, if the end of the catheter is coated with a mixture of dental wax and olive oil, the soft polished surface of the wax will be scratched by contact with the stone, and the

scratch marks may be seen by examining the wax with a low-power lens.

Other sources of pus in the urine are from tuberculous (Fig. 11) or other abscesses of the kidney substance itself, discharging into the pelvis of this organ and thus into the ureter. When tubercle bacilli are found in urine taken from

FIG. 11.



Showing a tubercular abscess discharging into the pelvis of the kidney, the shaded area showing the sound portion of the kidney.

the upper urinary tract, it almost always indicates a tuberculous affection of the renal substance. In rare instances a perinephric abscess such as a suppurating hydatid cyst breaks through into the renal pelvis, and so finds its exit from the body through the urethra. In all cases of renal origin the diagnosis will be made, and in some the exact cause determined, by using the ureteral catheters as recommended.

DISCUSSION.

Dr. Fernand Henrotin, of Chicago (by invitation).—Mr. President: This elementary paper, as Dr. Kelly calls it, appears to me to be very important. At least, he has presented it to us in a more or less elementary way, which makes it all the more pleasing. It is a matter of congratulation that we are able to go over such subjects occasionally in an elementary manner. We have so much to do with operative work that we are apt to lose sight of the proper and systematic analysis of a great many cases that come under our observation, and we frequently come to grief for want of following out what the doctor calls an elementary system of investigation. The subject is one of extreme interest, one that cannot fail to be interesting to those who are particularly engaged in gynecological work. If I were to criticise the paper in any way I should say that investigations of this kind are liable to be carried a little too far. The doctor should lay particular stress, in presenting a subject of this kind, on the point that there is a place to stop, and the very way in which he has presented it to us suggests that. If you find anything in the lower urinary tract, do not be in a rush to get to the upper urinary tract. In other words, a large number of cases of pyuria are due to difficulties around the bladder and the urethra, and they do not necessitate investigations farther up. Investigations of this kind are apt to become fashionable, and one may go too far in pushing them.

As regards the application of the method, there are always two drawbacks. The first drawback is on the part of the patient, and we all know why this method of investigation has not come more generally and commonly into use. A second drawback is lack of technical skill on the part of the surgeon to explore the upper regions. We all know something about Dr. Kelly's tactile sense and his ability to manipulate instruments, and those who have tried this work will acknowledge that it requires special skill, as well as extrene patience and a good deal of determination on the part of the surgeon. However, these are surmountable. We have to consider also the necessary time for this work. Our patients are not always of that class that will allow

us to give the time necessary to pursue these investigations properly, and this accounts to a certain extent for the reason why this subject has not been carried out further by the profession.

I wish to say a few words about the difficulties in the treatment of conditions of the upper urinary tract. I have had occasion to practise this method to a moderate extent. I have had occasion also to practise washing out the pelvis of the kidney to a limited extent. One of the things I would like to have Dr. Kelly refer to in his closing remarks is that it is not always easy to tell when the pelvis of the kidney has been absolutely reached. I wish the doctor would make a note of how we may be able to determine the exact position of the catheter. In washing out the upper urinary tract in general, I would like to have him mention to us what, in his experience, has been the proportion of cases in which regurgitation of fluid has taken place, such as frequently happens, along the catheter back into the bladder, and the difficulty also of determining that we are really washing out the kidney. I have had some doubt in a good many cases. To me the sensations of the patient have been a guide. After introducing the catheter into the ureter and pushing it well up to the proper place, in washing out I have seen regurgitation of fluid a number of times. By putting the patient in the knee-chest position and keeping her there during the washing out, which is a hardship if the patient is not under an anæsthetic, I have been able to determine undoubtedly that the kidney was reasonably distended. Another thing that is not very well known is the character of the solutions that are bearable by the kidney. The doctor's remarks have been directed mostly to the diagnosis, and very little, if anything, was said with reference to solutions that have been used heretofore, and successful, in curing pyuria of kidney origin. I have had occasion, for example, in one instance to use douches, washing out the kidney of a patient sixty-one different times, with great expenditure of time on my part and with great distress to the patient. It was a patient whom I at one time sent to Dr. Kelly. She was under his care for several weeks, but eventually the kidney was removed on account of the return of grave pain and nephritic colic. We have been told that boric acid, bichloride, and such solutions of minute strength are useful in these cases;

but we are more or less in the dark about it. I have used, for example, in a case a solution of peroxide of hydrogen, and left the patient on her back, and I could tell by the sensations of the patient that the peroxide of hydrogen had penetrated into the kidney region; at the same time, I was in fear that I might do some damage. The peroxide was slightly diluted with pyoktanin. Pawlick has been using, lately, solutions of nitrate of silver of the strength of 1 : 1000 for this purpose, and claims to have obtained contraction of the large dilated pelvis. He also mentions one point which may be of value. I believe there is good reason to suppose that a slight infection in a perfectly normal kidney with good drainage will very frequently cure itself. Certain it is, we recognize cases of acute nephritis following surgical operation in which, after a severe time, a perfect cure results. I believe a certain proportion of cases of the mild form of infection are aggravated and kept up by retention from above from malposition of the kidney, which is one of the points I would like to have Dr. Kelly dwell on. We may have a slight prolapse or deviation of the kidney, by which we get a disturbance in the relation of the ureter, and therefore retention, and from that a continuation of the septic condition. The falling inward toward the middle line of the lower pole is found frequently to be a great element of disturbance in movable kidneys, and Pawlick lays great stress upon the value of manipulations and massage of the kidney, and says, after getting perfectly clear urine, to the eye at least, he has been able to empty almost absolutely pure pus by manipulation and massage of the kidney itself.

This subject has been a most interesting one to me, and I am sure the doctor need not apologize for saying that his remarks were elementary, because I think the whole subject is in its infancy, and it is the proper and reasonable way of studying it.

Dr. Lewis McMurtry, of Louisville, Ky.—Dr. Kelly very appropriately remarked, by way of introduction to his paper, that the object of this society is educational. To promote such educational purpose it is essential that we should discuss one another's views freely, fairly, and fearlessly; otherwise, we will degenerate into a mutual admiration society, quite devoid of educational influence. Any criticism that I may offer on Dr. Kelly's paper will, I hope, be received in this spirit.

In the first place, the subject presented by the essayist is not

so novel as might at first appear. Diseases of the female bladder and urinary tract have been studied for years by Bozeman, Emmet, Skene, Simon, and Pawlick. The published results of these investigations have illuminated the subject so that the diagnosis and treatment of diseases of the female bladder and urinary tract are upon a scientific basis. Exploration of the bladder by endoscopy, and of the ureters by catheterization, has been made practicable by Prof. Pawlick, and the method modified and popularized in this country by Dr. Kelly. As a diagnostic resource the method described by the essayist has certain definite value; but, in my judgment, its scope in practical therapy is almost *nil.* I have witnessed the use of the instruments by Dr. Kelly, and have personally applied the method in a number of cases of vesical and renal diseases. Consequently, I am discussing the subject from the stand-point of personal experience.

I would not be understood for a moment as saying that this method is useless, and I beg that my remarks be not so construed. In the differential diagnosis between unilateral and bilateral disease of the kidneys, in eliminating vesical involvement in cases of pyonephrosis, and in some other conditions, this method of exploration has a useful purpose and should be cultivated. It is altogether for diagnosis. I know no advantage it can offer for the treatment of suppurative disease of the urinary tract.

It is the custom of surgeons to make an investigation of the urine of women as a routine part of examination preparatory to operation. In a very large proportion of the cases presenting for operation pus will be found in the urine. This observation should not mislead the surgeon, since pyuria may be due to leucorrhœa, gonorrhœa, or purely transient causes, disappearing when the operation has been performed. Unless there be quite a large quantity of pus, and in a specimen carefully drawn with the catheter, it is unnecessary to spend time and energy in search of a remote cause, when the most probable source of pus is apparent.

Moreover, exploration of the ureters is not under such conditions devoid of danger. Just as the area of gonorrhœal infection may be extended from the vagina through the cervical canal and beyond by injudicious instrumentation, so may a vesical infection be carried along the ureteral mucous membrane to the pelvis of

the kidney. Such indiscriminate and routine exploration of the upper urinary tract in cases of pyuria, as the essayist suggests, is by no means a harmless procedure: it may convey an infection along clean surfaces to the kidney. And, again, ureteral catheterization can avail nothing as a method of treatment. The constant secretion and passage of urine is more efficient for drainage here than any artificial washing from below can supply.

Dr. Kelly has cited a case of appendicular abscess opening into and discharging through the bladder as an instance illustrative of the value of this method in diagnosis and treatment. Surely such extensive disease would furnish in its clinical history and general physical signs indications for diagnosis and treatment sufficient without searching through such a devious route. In another case the common clinical observation of suppurative salpingitis discharging into the bladder is mentioned in illustration. Such cases are not uncommon, and I am unable to appreciate the necessity or value of vesical exploration, either for diagnosis or as an adjuvant to successful treatment of that form of pelvic abscess. Certainly one would be at a great disadvantage to exchange the established method of examination by touch for vesical exploration in such conditions, and I am unable to appreciate how such exploration could materially add to the diagnostic signs of pelvic abscess with pyuria so readily detected by the ordinary methods now in vogue.

In the case of suppurative pyelitis just related by Dr. Henrotin, which was treated by both Dr. Kelly and himself, the ureter was catheterized and the pelvis of the kidney washed sixty-one times, and finally a nephrotomy was done for the cure of the patient. Is it judicious to subject a patient to such prolonged and painful treatment of very doubtful efficacy, when the more direct, more surgical, and safe procedure of lumbar incision can be utilized? Certainly no better illustration of the inefficiency of ureteral catheterization as a therapeutic resource could be given than the case related by Dr. Henrotin as treated by Dr. Kelly and himself.

In conclusion, I venture to predict that the mature judgment which is born of experience will demonstrate that the range of usefulness of ureteral catheterization is very limited. The enthusiasm attaching to a novel and ingenious procedure is prone to exaggerate its scope and value. The history of surgery

is teeming with illustrative instances. While valnable in diagnosis, the successful treatment of pyuria involving the higher area must be conducted by other methods than ureteral catheterization.

Dr. C. A. L. Reed, of Cincinnati, Ohio.—I have enjoyed the very lucid lectnre by Professor Kelly, to say nothing of the equally lucid remarks by the gentleman who has jnst spoken. I rise at this juncture, not so much to speak of Professor Kelly's method as to say a word or two in favor of the method; not that I would decry it, as I do not understand that he advocates its universal adoption. I do not understand that it is his purpose, much less my own purpose, to put a cystoscope into every woman who may complain of painful and frequent mictnrition; but I have found this method extremely valnable in a linited nnmber of cases and of comparatively easy adoption. I recall one case in particular, and I may be pardoned if I allude to it here. A woman had been presenting symptoms of pynria for several years, to the discomfiture of a number of physicians who preceded me in the case. It was equally obstinate in my hands nntil finally I adopted this method of investigation, with the result that by a specular examination of that viscus I was able to detect quite easily the presence of a small grannlar mass jnst at the orifice of the left ureter. It was easily curetted off at the same examination. Immediately it was removed, obstruction was freed, the pus escaped from the ureter and from the kidney, drainage was entirely spontaneous, and in two weeks my patient was well. That was one case in which, althongh extremely doubtfnl, I found the method easy of adoption, and the results were extremely satisfactory. Dr. McMurtry alluded to this method of examination in cases of suppurative kidney and the ability to determine thereby which kidney was involved. I am in a position, from a very painfnl experience, to testify to the extreme desirability of some snch definite way of establishing this diagnosis. I am in a position to say that pus in the kidney, so far as any local symptoms are concerned, is freqnently a symptomless state of affairs. The only evidence is discharge of pns. Pain itself is one of the most misleading factors that may be relied upon, and very frequently in an overworked, comparatively well kidney, is very much greater than that in the affected organ. No doubt the affected organ frequently escapes painful experience altogether.

It is only for the purpose of offering these little suggestions that I rise to speak of the paper. I do believe that the method that has been presented to us is one of practical utility, and while it is a method that should not be used indiscriminately either by skilled or unskilled men, much less the latter, in all classes of cystic disease, or in all cases of pyuria, I really believe that it will enable us to arrive at an accurate diagnosis in many cases in order that we may be intelligent and direct in our methods of treatment.

Dr. Rufus B. Hall, of Cincinnati, Ohio.—I did not expect to take part in this discussion until I heard the remarks of the gentleman who preceded me. I enjoyed the paper very much, as every one in the room must have done. While I agree with much that has been said against this method of investigation and the treatment of these cases, I fully concur with Dr. Reed that it is of very great value. I do not think the essayist had any idea of conveying the impression that every woman who has pus in her urine should have this systematic investigation of the whole urinary tract. Commence your examination from the urethral orifice until you locate a definite lesion. This is a rational and sensible procedure, which must redound to great good to the practitioner. The difficulties attending this investigation will be overcome by increased experience. Any man who can use a laryngoscopic mirror can carry out this investigation, and if he does not catheterize the ureters the first time in five minutes, he will do it the next time in two minutes. There has been such severe criticism of the paper, that I feel it is due Dr. Kelly and the method to place on record cases where it has been of utility. I have had two cases under my observation quite recently which I will narrate briefly. The first case was a woman who had been under the care of a number of excellent physicians, none of whom had attempted this method of investigation. Within three minutes after she had been on the table, by this method I could positively locate a stone in the ureter within half an inch of the bladder on the right side. The patient had been ill some four or five years with obscure bladder symptoms. The second case was the wife of a physician from Minneapolis, the mother of two children, and was delivered of her first child some three years ago. She had an attack which simulated nephritic colic. She was delivered of the second child

six months ago, and before she was out of bed she had another attaek simulating nephritie eolie. She had eystitis, was treated for two or three months, and was finally sent to Cineinnati, when she eame under my observation. The symptoms were extreme, and the suffering from the irritable bladder was dreadful. Within two minutes after she was placed in the knee-chest position I was able to deteet in the left ureter a ealculus which I easily dislodged with the seareher, and inside of fourteen days all symptoms had subsided. It was due to the method, and due seienee to put these eases on reeord. Neither one of them has been reported heretofore. In a number of instances the method has been of great value to me. I will grant there is much truth in the argument against the method, as advoeated by Dr. McMurtry, but there are eases in whieh I would dislike to discard this method and go baek where we were a few years ago.

Dr. W. E. B. Davis, of Birmingham, Ala.—We are all under obligations to Dr. Kelly for his valuable work along this line. He has stimulated us to investigate the bladder, perhaps, more earefully and systematically than we have done heretofore, and I believe the method that he has popularized is of valuc in loeating lesions in the bladder whieh we have overlooked before. He has partieularly helped us in determining by this method the kidney involved. Often we have been in doubt as to which kidney the pus eame from, and the method of plaeing the patient in the knee-ehest position and seeing the pus eome from the ureter is unquestionably of great value. I do not believe, however, that it is wise to treat pus in the pelvis of the kidney by the method suggested by Dr. Kelly. The sooner we put an end to pus passing from the kidney into the bladder the better. In some eases of kidney abseess we get very serious forms of bladder trouble on account of the long duration of the pus in the kidney and of its eonstant passage into the bladder. Furthermore, the treatment of pns in this region by the method of Dr. Kelly is a step baekward. We learned a long time ago that many eases of vesical inflammation had to be treated by free ineision and drainage, and that it was the rest that the bladder received by the incision, that cured, and not the drainage *per se*. Now, it seems to me, that a great majority of these cases can be better treated in a more simple way by opening the kidney from behind and draining it.

Dr. A. M. Cartledge, of Louisville, Ky.—My experience in this work is very limited, and it is only during the last year that I have used the cystoscope according to the method described in the paper. I am very much inclined to agree with the last speaker (Dr. Davis). The paper dealt in a comprehensive way with the best means of determining the origin of pus in the urine of females; but my observation and opportunities for following them along up into the bladder have been limited. When I reach the ureteral orifice I think it is the place to stop, except as regards a superficial exploration. I have seen this redness that the doctor speaks of, of one ureteral orifice, indicating the unilateral character of the kidney lesion, as was verified subsequently, first by a nephrotomy and then by a nephrectomy. I think the appearance here, with delicate catheterization of the ureter to demonstrate positively that the pus comes from that ureter, is about all that we are justified in exploring. I do not see how, in cases of gonorrhœal inflammation of the ureter, we can do other than harm, provided the upper part of the tract is still uninvolved, by the passage of an instrument up through, with denudation of, the lining membrane, carrying infectious material. By such instrumentation, in cases of gonorrhœal ureteritis, we are apt to carry infection higher up, so that it may extend to the pelvis of the kidney. If this knowledge is of great value, we might take that risk. It is only valuable to determine that we have a unilateral or bilateral condition, and to know that it is above the superficial parts. Suppose we find strictures and retention of pus in the kidney and dilated ureter, my experience has been that none of these cases can be relieved by treatment through the bladder, washing out, and catheterization. I recall three cases, one of my own, in which drainage through the affected pelvis was made. I do not know what Dr. Davis' experience has been, but I would like to have had him say something further, for my experience is that even nephrotomy, in the majority of cases, does not cure them, and that subsequently the kidney is removed before the patients get well. It is true, my experience has been limited. The method described, in order to determine for diagnostic purposes the seat and origin of the pyuria, is of the greatest advantage, and it enables us to do this.

Dr. Howard A. Kelly (closing the discussion).—My good

friend, Dr. McMurtry, has made some criticisms on the methods of examining I have just described, and apologizes some for criticising. When I cannot stand criticism I shall stay at home. I need not say much in the way of answering these criticisms, for the reason that my other friends who have taken part in the discussion have answered for me. Dr. McMurtry, for example, will have nothing to do with the method; Dr. Davis will go so far as to look into the bladder and see things that are there; Dr. Cartledge will go a little way up, as far as the ureter, and stop there, and Dr. Henrotin goes with me up the entire length of the ureter. The criticisms as to asepsis ought not be disposed of lightly. With satisfactory surroundings for the easy maintenance of antiseptic and aseptic conditions, these examinations can be made with but little danger. The man who is not extremely careful may easily, while examining a slight condition, produce infinite harm. I have to recall to your minds the infections and the cases of death which have resulted from the passage of the sound or catheter in the male urethra. Just as great injury may easily arise from an unclean examination of the ureters of a woman; it is much more apt to occur if you poke an unclean catheter up the ureter, because there is almost always some trauma of the ureter produced by catheterization. Let the warnings have their full weight. Surgeons should bear these points in mind.

I am particularly indebted to Dr. Hall for those interesting cases he related, and to Dr. Reed for his most interesting and instructive remarks. We want just such facts, the citation of specific instances in which the method has been useful.

Dr. McMurtry's criticism as regards the frequency of pus in the urine is a point which deserves careful attention. In my gynecological work I make these examinations as a matter of routine, and the notes state whether the specimen of urine has been catheterized or not. We cannot distinguish between urine contaminated by leucorrhœa, which always presents the appearance of containing more or less pus, and urine from the bladder with pus unless we obtain it by catheterization.

Dr. McMurtry.—Please state, Dr. Kelly, whether you catheterize the ureters of every woman you operate on.

Dr. Kelly.—I catheterize the bladder. You (Dr. McMurtry) spoke of contamination of the urine by leucorrhœa, I be-

lieve. It must be catheterized urine from the bladder, not the ureters.

To determine the source of a pyuria I would examine every woman most minutely and carefully, beginning anatomically from the distal urethral orifice up to the kidney, if she complains of any urinary symptoms whatever, which appear to be grave and persistent and resist simple measures of treatment. I have never seen any serious harm come from an examination. I recall three cases out of a large number in which I have produced, by making a ureteral examination, urethral fever. The cases were practically the same. The temperature rose and varied from 103° to 104° for three or four days. In all the cases the temperature became normal in three or four days.

Dr. Cunningham.—It occurs to me that the method described by Dr. Kelly might be criticised on the ground that the surgeon is liable to cause infection by such manipulations. I would like to ask Dr. Kelly whether he can make the ureter aseptic prior to this investigation.

Dr. Kelly.—We must be careful not to introduce anything from the outside. If my instruments are clean I do not hesitate to carry them up the ureters, and I have not yet seen any grave injury from a little lesion of the mucosa made by the catheter from absorption from such a small infected surface.

THE EARLY DIAGNOSIS AND TREATMENT OF CANCER OF THE UTERUS.

By William H. Myers, M.D.,
Fort Wayne, Ind.

Those of us who have theorized on the evolution of cancer have had thrust upon us for explanation certain broad facts in the natural history of the disease. We have seen that the natural course of a cancer, left to itself, is to pass into extending processes of local destruction, which sooner or later exhaust the general strength and end the life of the patient.

Theories Respecting the Nature of Cancer. There is a theory which includes in the causation of the disease a constitutional malady, something apart from the palpable local tumor, the expression of a specific blood condition.

There is, again, a theory which attributes cancer to what may be called a textural or organic diathesis. It restricts the cause of the disease within the organ or tissue affected by it.

Lastly, we have the theory that the disease is in its origin purely local.

No more important question ever presents itself to the surgeon than that involved in the foregoing theories. Is the disease local or constitutional? This is a distinction between life and death—a distinction so vital and irrevocable that no verbal criticism can destroy it. It is the salient point upon which rests the successful treatment.

The beginning of cancer is of singular importance to the profession, as a matter of clinical as well as of pathological interest, for it involves an important practical point. If we could find out the inception of the disease, and were thus

enabled to treat it early, a satisfactory arrestation could be promised to the patient, for pathology shows every case of malignant disease to originate in a single, more or less limited area of tissue, and to be subsequently disseminated by cells or by minute protoplasmic particles. This rapid dissemination is owing to the extreme vascularity of the tissues surrounding the tumor and the absence of an enveloping capsule, the latter greatly facilitating the migratory cells travelling into areolar space, and also accounts for the early appearance of the general constitutional infection.

In discussions upon this part of the subject we often hear the words constitutional and local used. I think it would be better to drop the word constitutional and assert that cancer is a disease which ultimately kills by becoming general, but which at first is local, and that the local not only precedes but also causes the general.

If we adopt the view that cancer appears first in a certain locality, and that the danger consists in its extension from that locality to organs more or less remote, then we are in a position to advance the arguments in support of an early diagnosis and treatment.

One of the greatest laws which has yet been formulated is that the earlier a cancer is removed, so much the more likely is the operation to be permanently successful.

Now, if we hold the view that the *general system* is first charged with cancer, and that its appearance in the uterus is merely an output, why should we operate at all? Should we not rather leave what exists alone?

If, in contemplating a series of operations, we find that a subsequent renewal of the local disease occurs, it must be regarded as an imputation upon their completeness, and it would be superfluous to invoke the influence of the constitution in explanation of its recurrence.

In further consideration of the early diagnosis, I will quote the language of Dr. Walter B. Chase, of Brooklyn: "No matter how broad the culture, how consummate the skill, how exact the technique, or how perfect the mastery of the

subject in other particulars, a lack of corresponding acquirements, inability to make the earliest possible diagnosis, may be fatal to the safety of the patient."

What method shall we adopt to make an early diagnosis? Observe closely and reflect upon the history of the case as detailed by the patient; encourage her to describe accurately every symptom, and insist, and urge her with all the force which the strongest conviction of a necessity imparts, on a local examination. How seldom do we have an opportunity of an early diagnosis! Patients who come to us after the disease has passed the limitations of surgical aid must be regarded as inoperable, so far as a permanent cure may be promised. We must confess that we often treat symptoms as trivial that appear to the patient as unworthy of special notice: for example, an abnormal menstruation, a vaginal discharge, or a trifling hemorrhage—seldom profuse. At this stage there are no symptoms that would indicate to the person afflicted the presence of grave disease; nothing to interfere with the ordinary course of life. The woman's fears are not excited, nor her attention attracted; especially is this true if she is approaching the menopause; she is not alone in the opinion that the menopause is attended by the symptoms already mentioned. It is also held in some vague way by many members of the medical profession. From these views results long delay on the part of the patient in seeking early professional advice, and when obtained from the class above alluded to, astringents with injections are prescribed, possibly with ergot, or the unhappy viscus is impaled upon a stem or perched upon a prop, or is painted with carbolic acid every week. In view of this it is not difficult to account for the small progress made in the diagnosis and cure of uterine cancer. It is proper to state, in extenuation, that the patient herself is sometimes the chief obstacle in the precise diagnosis, by obstinately refusing to submit to the proper investigation. We should be firm in our demand, in view of the fearful responsibility thrust upon us.

Elements of Diagnosis. The great feature which dis-

tinguishes a malignant ulcer or nodule from simple erosion or chronic cervicitis is the tendency to bleed freely when touched. The absence or presence of bleeding, when a diseased cervix is touched gently during an examination with the finger, is of supreme importance. If this can be done without bleeding, there is the strongest probability that the disease is not malignant.

The tissues are not found hard, irregular, or nodular on the first digital examination. The uterus is also movable at this stage, or the movements may be only slightly embarrassed. In this early stage for diagnostic purposes the great feature of malignant disease, as compared with any other possible disease, is the friability of the affected tissue. J. W. Sinclair says: "This first impressed me many years ago, and for a long time I have depended largely upon it, as I consider it to be a pathognomonic indication of the presence or absence of malignant disease in the earliest possible stage. The method of diagnosis resulting from this great fact of friability is one which every general practitioner may apply in order to establish a *prima facie* case. This friability is indicated by the readiness with which the volsella tears through when there is considerable infiltration of the malignant elements; and, in less advanced cases, by the facility with which one can fill the sharp spoon upon a clearly cut-out portion of tissue."

The clinician will depend upon the following facts:

The rapid development of the case.

Non-specific character of the ulceration.

Age of the patient.

Increase after thirty years of age.

Marriage—in 1000 cases, 771 married.

Hemorrhage.

Pain.

Fetid discharges.

General cachexia.

When the last two symptoms occur it is highly probable that the case is already inoperable.

By far the most prominent symptom in the early stage of the disease is hemorrhage, and in support of this I will quote some of the ablest authorities.

J. Knowsley Thornton says: "In the earliest stage hemorrhage, pain in the back, pelvis, and down the thighs are the prominent symptoms."

Dr. Henry Bennett says: "It is almost invariably in this stage that the physician is consulted; before it no symptoms generally exist which call for physical examination."

Dr. J. Y. Simpson's opinion: "The blood discharge is as frequent a sign of carcinoma as pain, as it is an early and constant indication of the disease."

Garrigues tells us that "The first symptom that brings the patient to seek advice is loss of blood."

Hart and Barbour, in their text-book, declare that hemorrhage is usually the first symptom noticed by the patient. This view is also upheld by the *American Text-book of Gynecology.*

Jones, Drs. Madden and Montgomery, Seanzoni, Pozzi, Emmet, and Thomas, all indorse this opinion.

Professor S. D. Gross, one of our greatest authorities, used the following language: "These symptoms of carcinoma of the uterus are usually unequivocal, even at an early period of its existence. One of its very first effects is hemorrhage, not slight but severe, long-continued, and recurring with more or less frequency throughout its entire progress, and becoming more and more profuse. It is therefore a phenomenon of great diagnostic value, particularly in the incipient stage of the affection."

RESULTS. Passing over the technique of the operation, which is so well understood by the members of this society, and to which they have contributed so largely to render it a perfect cure, I deem it proper to refer only to the results of extirpation per vaginam.

Krenburg says: "In 197 operations for cancer of the cervix, 25 died directly in consequence of the operation." This is 12.7 per cent.

Terries and Hartman give a record of thirty-five cases with a mortality of 23.5 per cent. They put down recurrences at 70 per cent. and cures at 30 per cent.

Richelot published, in 1892, 225 operations with 11 deaths —5 per cent.

Burke in 1892 gives a summary of the operations, mostly German: 273 operations; mortality 10 per cent.

In 1894 Abel and Laudan, of Berlin, give 93 cases with a mortality of 5.4 per cent.

Zeifels, mortality of 5 per cent.

In 1895 Richelot, 44 cases of cancer and 3 deaths, still a total mortality of practically 5 per cent. These figures for operations are given to indicate how little inherent danger there may be in the operation itself.

In regard to recurrence after operation, Winter divides the cases observed into three classes:

a. Recurrence by metastasis.

b. Lymphatic recurrence.

c. Local recurrence.

Only 2.5 per cent. of women operated upon suffered from metastasis.

Lymphatic recurrence was important.

Blair, in post-mortem examinations in 203 cases, found infection of the glands forty times.

Local recurrence is by far the most frequent of the results of incomplete removal of the affected tissue, and is by infection from cancerous material coming in contact with freshly wounded tissue.

The following statistics give cases in which no recurrence took place:

Fritsch, 36 per cent. after five years.

Hoffmeier, 33 per cent. after 4 years.

Schauta, 47 per cent. after two years.

Olshausen, nineteen cases out of forty.

Leopold gives seventy-six cases, with seventy-two still well, without recurrence of the disease from one to five and one-half years after the operation, and not "in absolute

health after five and one-half years," as stated in one of the medical journals of recent date.

The following statement is made by Dr. Joseph Eastman: "Vaginal hysterectomy, when made by an expert, is a means of saving the lives of many women (50 per cent.) who only a few years ago were destined to die the most horrible death from a disease so loathsome that in their dying hours they felt compelled to isolate themselves from those near and dear loved ones whose fond caresses would have been such a comfort."

These extremely favorable results (50 per cent.) must be attributed to the fact that the opinion is held by this class of operators that "every uterus which gives even a marked suspicion of malignity should be removed." A German author, writing upon this subject, says:

"In many contributors on the subject of results there appears to be a tendency to hold a sort of inquest on every death, and to draw up percentages according to the verdict obtained, after explaining away the causes of death."

I would only add that possibly—by the tender mercies of God—there may be some errors in diagnosis.

Microscopical Diagnosis. Specialists in diseases of women, and pathologists, usually assure the general practitioner that the diagnosis of cancer in its earliest stages is not complete without microscopical examination. Such an assertion discourages exact clinical observation, and is equivalent to telling the general practitioner, with comparatively few exceptions, that he is incapable, on account of ignorance, or disabled by the exigencies of his professional life, from forming a sufficient diagnosis in a class of cases of frequent occurrence, and in which such serious practical consequences may follow his mistakes. It is, moreover, misleading in that it attaches undue weight to a method of diagnosis which experience proves to be undeserving of such implicit confidence.

Mr. Knowsley Thornton, speaking in favor of clinical observation, says, if sufficiently close and painstaking, it will generally give a distinct diagnosis in good time for successful

interference. Dr. Herman, speaking on the same subject, says: "I think the value of the microscope in the clinical diagnosis of cancer has been overestimated. A diagnosis based on the microscopic examination of sections of tissues must be accepted with great reserve."

W. J. Sinclair says: "I have no hesitation in saying that diagnosis by microscopic examination, as far as the general practitioner is concerned, into whose hands come the overwhelming majority of cases of early cancer of the uterus, is simply impossible. If you take, for example, the description by Rugue and Veit of the appearances of non-malignant papillary or glandular erosion of the cervix uteri, and their opinions with regard to the appearances of non-malignant compared with malignant changes within the same area, their statements add to our difficulties. They say that there is no clear borderline, so far as histology is concerned, between the benign and malignant changes; and it requires a long and concentrated experience, and the special knowledge and acquirements of a professional pathologist who has given much attention to gynecology, to make out the difference with such clearness and confidence as to guide him to a conclusion on a question implying such serious practical consequences as whether a tissue change in the uterus be benign or malignant."

Carl Rugue says: "At the present time it must be the task of the physician to recognize cancer as such in its early stage, and this is possible in very many cases only by means of the microscope." He evidently belongs to the class who regard as fatal to the professional character of a man to be accused of being merely a clinician. He would have us come to the microscopist as Nicodemus came to Jesus—by night, and said unto him, "Rabbi, we know that Thou art a teacher come from God, for no man can do these miracles which Thou doest except God be with him."

If a grave disease, which is local in its incipiency, is permitted to become generalized, there must be something very defective in our knowledge and practice. All specialists who have given their attention to the operative treatment of cancer

of the uterus lament the smallness of the number of cases that come at a sufficiently early stage to give them a reasonable hope that the operation of extirpation will be followed by a complete measure of success.

The chief objection, as a matter of diagnosis, to a microscopic examination of tissue obtained from a portion of the organ suspected is the difficulty of application, as it requires special knowledge. In a recent paper upon "Cancer of the Uterus," by John M. Fisher, of Philadelphia, he says: "Microscopic appearances of structure will not be referred to, because they present themselves to the busy practitioner more in the form of difficult algebraical problems than as practical working formulas; furthermore, experience in the diagnosis of this disease has taught us that reliable expert pathologists are numbered among the few, even in our large cities."

What we require is an easily applied clinical method of diagnosis, such as will distinguish early cancer from any other condition which a practitioner of average knowledge and intellect could possibly mistake for it.

I might without difficulty find a good many examples of loss to the practical knowledge of disease by an overweening confidence in instrumental methods of research, and a corresponding distrust of opinions based upon an observation of merely clinical facts. The tendency of the day is to expect all truth from the microscope and the test-tube, and to give to any announcement of fact from the laboratory a degree of confidence which is refused to the verdict given on circumstantial evidence.

The tendency is to receive with impetuous haste every little so-called discovery of the chemist or the bacteriologist, and to permit them to supersede, in some instances to override, the conclusions deduced from common observation. The painstaking and cautious observers have been disparaged as means of arriving at discoveries, and the result is that common observation is not cultivated with the industry, zeal, and continuity which would result from a further conviction and

faith in its methods. Many of the most important problems of medicine are from their nature but little amenable to the exact methods of scientific investigation, and, therefore, we ought not to be deterred from the only kind of research that is really hopeful. Common sense must not, therefore, be rudely thrust aside by so-called "scientific investigation."

The knife has become the emblem of gynecological treatment. It has supplanted the curette, intra-uterine injections, caustic applications, the quaint conceits of the monkish craft, and the brutal records of the cancer cure. The knife has become, in a surgical sense, the specific therapy of this particular disease.

DISCUSSION.

Dr. J. Wesley Bovée, of Washington, D. C.—Mr. President: I was much pleased with the paper of Dr. Myers, because it is in line with my own views on the subject. I have great hope that the treatment of cancer of the uterus by total extirpation will be the means of saving 75 per cent. of cases through the instrumentality of early diagnosis and early operative interference. The mortality rate of the operation itself has been materially reduced. According to the *Annals of Surgery*, in which there appears an abstract of a paper by Leopold, whose statistics were published therein this summer, he had done a hundred and thirty-nine vaginal hysterectomies for cancer of the uterus, with three deaths. Of the last one hundred cases operated upon there were no deaths, which is a good showing for the operation.

As to the diagnosis, too much stress has been paid to the symptoms of the menopause. We know that the largest number of cases of cancer of the uterus occur during the ages of forty and fifty, and the menopause occurs at the same time. The symptoms of hemorrhage, discharge, and pain are usually at that time indicative of cancer, and, unfortunately, advanced, not early cancer, is attributed to the menopause. This is a fault on the part of the medical profession more than of patients. There are many cases considered by the physician as being the establishment of

the menopause that are advanced cases of cancer. We all know that. I have had cases sent to me for treatment of women having had hemorrhages at intervals extending over eight or nine months, no vaginal examination having been made. So there is neglect on the part of the profession toward these cases. In the beginning of cancer we sometimes have a little hemorrhage, sometimes a little discharge. The pain is not constant, and even the hemorrhage and discharge are not altogether reliable. We must depend largely upon frequent examination of women. I wish Dr. Kelly was here to speak on this subject, as he has given considerable attention to it, particularly with reference to the necessity for the examination of women who have had children. We know that this disease occurs most in women who have had children, and not very frequently in single women. An examination should be made within a few weeks or two or three months after labor, and the condition of the cervix, whether lacerated, or the lips everted, or indurated, should be jotted down in a note-book. If there is laceration of the cervix the case should be followed by careful examinations once every few months, certainly not at greater intervals than a year, and the deep lacerations or eversion of the lips should be repaired at once. In either case they should be carefully watched, and the patients who present any symptoms that can be attributed to the possibility of cancer should be prevailed upon to have an examination made. It is not an easy matter to get patients to submit to these examinations; but they can be taught the necessity for it. The first symptoms that we can find to lead to the suspicion of cancer are the ease with which hemorrhage is produced by the finger-nail applied to the cervix, or possibly a feeling of nodules in the cervix, which can be differentiated easily from cystic degeneration by puncturing the cysts, and from small fibroids, on account of the difference in the character of the tissue surrounding these nodules. I, for one, do not place much reliance on microscopic examinations, and, as Dr. Myers has said, it is not a method of diagnosis that is open to the use of the general practitioner in the country. I have had cases of hysterectomy in which a diagnosis of cancer was made from the appearances, operation was performed, and later the patients have had a recurrence of the disease, died of it, and yet the microscopist, after examining the specimen, has said it was not cancer. We know, too, that micros-

copy is not reduced to an exact science, and the disease oftentimes in the early cases is deeper than the mucous membrane, and the tissue is not gotten deep enough for microscopical examination. The result is that the examination, being made of superficial structure, does not show cancer; the case is not pronounced cancer, and the patient is allowed to go on to a fatal termination without an operation.

Dr. Joseph Eastman, of Indianapolis, Ind. (by invitation). —I was not in the room during the time Dr. Myers referred to my statistics in connection with the removal of the uterus for cancer. Permit me to say, in explanation, that in my address before the State Medical Society of New York, I simply made the prediction that the time was coming when, after making an early diagnosis of cancer, considering all the subjective and objective symptoms, disregarding the old story of the menopause, we could by early operation save 50 per cent. of the women afflicted with this terrible and loathsome disease. The statistics of Leopold and others quoted here to-day come so near that I am inclined to believe it has already reached 49 per cent. I believe, as firmly as I believe anything, that cancer is in a large percentage of cases, when it attacks the uterus, a local disease. Cancer of the uterus is three times as frequent as it is in any other portion of woman's body, and if it is three times as frequent in females as in men, there must be some rational and local cause in the prolonged localized irritation which we have in and about the cervix. When I speak of hysterectomy for cancer I mean to carry out the same principle that Gross advocated in removing the breast, namely, go wide of the disease. It is not a matter of indifference how this operation is made. Mackenrodt, of Berlin, insists upon burning every particle of tissue severed, so that there shall not be a dissemination of the cancer germs, and the disease is prevented in that manner from returning. I have been making a hard fight for hysterectomy in Indiana and the West, and I must not stop at Dr. Myers's warning. I am pleased with the results I have secured from this operation. I have many times been thanked by women for having operated on them and in whom the disease has returned in one, two, and three years. I have relieved them of the horrible discharges and hemorrhages that accompany this disease, and they have thanked me for what I have done for them. In many of these cases I am satisfied

that had hysterectomy been done sooner lives might have been saved.[1] It is true that advanced steps in abdominal surgery have not at first been conceded; they have been contested. It was so with ovariotomy; it was so with the removal of fibroid tumors, these operations for fibroid being now followed with the same low mortality as operations for ovarian cysts. We are moving in the same direction with hysterectomy for cancer. This morning I heard Dr. Kelly's very careful and minute description of his method of catheterizing the ureters for the purpose of treating disease. I would admonish men at my age not to begin such work. It belongs to the young men. I began hysterectomy when a young man, and will undertake hysterectomy with the younger men, and I shall keep it up while I have such gratifying results. Again, I do believe the time is coming when we shall be able to *save* 50 *per cent.* of the cases of cancer of the uterus with early diagnosis and expert operating. I will not make it 49 per cent., and to show you that I can prove what I say, I will submit the names of patients, their localities, and the names of the attending physicians.

Dr. T. J. Crofford, of Memphis, Tenn.—I do not believe that statistics will hold good all around like those given by Dr. Eastman. In Germany women go to the clinics much earlier than they do in this country. When they have any trouble with the uterus they go straight to the clinics. The result is the operators there get hold of the cases earlier than we do in this country. If we are going to do any good by vaginal hysterectomy for cancer, it must be done very early, and especially in cases of epithelial cancer.

Now, I had an opportunity of studying the work of Jacobs very recently. It is only one month since I left his clinic in Brussels. I did not watch any of the work of the other French operators on this trip, neither did I observe any of the work of the Germans. Jacobs uses a cautery knife in burning around the cervix for the purpose of controlling hemorrhage and devitalizing cancerous cells which may be in the sweep of the incision. I think beyond any doubt Jacobs is the finest manipulator in

[1] Medical Record, 1893. In answer to letters sent to attending physicians of thirteen women who had the uterus removed for cancer and had subsequently died, every doctor said the benefit justified similar operations, even demanded earlier effort.

doing difficult work through the vagina that I have ever seen. He certainly does vaginal hysterectomy better than any one I have ever seen. He has recently laid aside the clamp entirely, and has gone back to the ligature, and uses it upon the broad ligaments. His immediate results are superior to those of Leopold, of Olshausen, or any other operator in the world. He has done a hundred vaginal hysterectomies with the ligature without a death. But he does not operate for cancer any more. With all that beautiful work his statistics, as given me from his own mouth, are very discouraging. He is perfectly disgusted with vaginal hysterectomy for cancer. I asked him how he harmonized his ultimate results with those of other operators, and he said it was due to two things. In the first place, in some places in the world women consulted surgeons earlier; they realized the danger, and consequently they went to clinics and underwent operations earlier. Secondly, there was a great deal of lying about statistics, not that operators often intended to give out false statements, but they rely largely upon the microscope as an aid to diagnosis. I do not know of anything more fallacious than the microscope in these cases. I do not send my specimens as frequently to microscopists as formerly. I would rather rely on the macroscopic appearance of the growth. There are surgeons in New York who have not removed a cancerous uterus in the last year or two, and they are men who are doing a great deal of pelvic and abdominal surgery. They are perfectly disgusted with the permanent result of the operation. Now, there are those who contend that if we have an epithelioma of the cervix and get the case early enough, we can, without removing the uterus, give just as great immunity by a high amputation of the cervix. In other words, they cut around the cervix with a cautery knife, draw it down as though they were going to do a hysterectomy, strip back the tissue, and burn it off at the internal os. I have done a series of these operations. I have done two in the last week. I have done a series of these operations dating back two years, and all of them are living, when hysterectomy would have given immunity. The results are better than those in which the uterus is removed by the vagina. This operation is more tedious than that of hysterectomy; but I believe it will give better permanent results. If there is any variety of cancer in which hysterectomy is justifiable, it is in those cases of cancer of the body of the

uterus where it begins in the endometrium. There are those who claim that if you cut off the cervix at the internal os in cases of cancer of the body of the uterus, and burn the parts with the thermo-cautery, charring the interior of the uterus so as to leave simply a shell, you will effect a cure. That is the operation I have been doing for the last twelve months. By doing this operation you can bring about a cure, provided the disease has not attacked the lymphatics in the broad ligament. If the disease attacks the lymphatics in the broad ligament, nothing is going to cure it. If the disease has not extended to the broad ligament there is no necessity for removal; but if it has there is no good accomplished by the removal. If the disease be confined to the cervix, as in epithelioma, there is no necessity for removal. If there be disease of the endometrium, then by amputating or cutting it off at the internal os, and catching with tenaculum and hooking it down with forceps, destroying every particle of glandular tissue with scissors and cautery knife, you will destroy the diseased area just as effectively as you will if you take out the uterus.

Dr. Thaddeus A. Reamy, of Cincinnati, Ohio.—I cannot conscientiously permit this discussion to rest at this stage. My clinical experience with uterine cancer has been considerable. During the last twenty-six years I have seen and examined about a thousand cases. Of this number I have had under my personal charge about seven hundred. I have watched the results of the treatment by others and of my own work. I was much impressed with the statistics which were offered by my friend, Dr. Eastman, in the paper recently read by him in New York, and I have been extremely entertained and impressed by the eloquent speech which he has made on this floor to-day. All acknowledge his ability as an operator. And let me not for a moment be understood as raising a question of veracity as to his statistical statements. Simply, they are misleading. They are too general. The claim that 50 per cent. of all the cases of cancer of the uterus operated upon will recover without recurrence cannot be sustained. If vaginal hysterectomy is performed by a skilful operator on women where the disease is limited to the uterus, I venture to say that 98 per cent. of the cases will recover from the operation. Of all formidable operations it is attended with the least danger, and is easy of accom-

plishment. Perhaps not more than 1 per cent. of the women would die directly or remotely from this operative procedure, if done by a skilful operator, assuming that the women are otherwise healthy. The time required is short. The shock is slight, and the opportunity for drainage is perfect. But recovery from the operation is one thing; cure of the disease, another. Even when the surgery is done early, while the disease seems to be confined to the vaginal portion of the cervix, the permanent cure will be limited in the hands of any man. But, as in a very large percentage of all the cases seen and operated on by any man, the disease is not so confined, is not so localized, the percentage of cures must necessarily be, and is, small. I believe cancer to be primarily a local disease, and, therefore, in many instances, if operated on sufficiently early, is curable. It is encouraging to note that the percentage of cures is increasing, solely, as I think, because a larger percentage of cases are operated on earlier than formerly. Nothing has been added to the knowledge of our fathers as to the causes of cancer. And it must be confessed that our proof that it is primarily local is purely clinical. A man, probably a smoker, has an epithelioma of the lower lip. It is removed by the surgeon, and but seldom is there recurrence. Why is this especially true at this locality? First, probably, because the site of the disease leads to early discovery, easy diagnosis, and prompt removal. Second, the anatomical conditions do not favor such early and hopeless lymphatic involvement beyond the field of excision. But again I ask, in how large a percentage of cases do the poor victims of this horrible disease (cancer of the uterus) come into the hands of men who are expected to operate in proper time? Although the essayist emphasized this point, I pause for the answer. Out of the proportion of cases that come to my distinguished friend on the left (Dr. Hall), referred to him by the practitioners in Indiana or in Ohio, or to my friend, Dr. Eastman, not 50, not 30, not even 25 per cent., are operable, or will recover from the disease, no matter who does the operation, and I challenge the records of cases to contradict the statement I make. We all have, as has already been stated, recoveries, permanent cures. And how gratifying are such results! But let our statements in such matters be specific; let us eliminate from them everything calculated to mislead. This latter statement is all the more important now because of

the declaration of my friends, that hysterectomy is justifiable even in cases where the disease cannot be wholly removed. This rule would still further lower the percentage of recoveries.

I come now directly to the question as to whether we are justified in making the radical operation for removal of the uterus in cases in which the evidence is conclusive that we cannot eradicate the entire disease. It has just been stated that even in such cases life is prolonged by the operation. I do not believe this. We cannot always tell which case is operable and which is not. Every clinician is puzzled on this point, and in case of doubt the operator must be the sole judge. But unless convinced that you can remove all of the tissue that is diseased you had better not do a radical operation. This, I am aware, may be considered heresy, but it is on my part made after much study and observation. I venture to say the woman will live longer, she will live more comfortably, she will be better in every way if she never sees an operator if he belongs to the class who believe that the uterus should be removed even though outlying structures are involved in the disease. After operation in such cases, the speedy manifestation of the disease—all the more rapid in its fatal course in consequence of the operation — warrants us in calling them cases of continuance and not cases of recurrence.

I am reminded by one of the speakers of the fact that our distinguished countryman, Dr. Clark, of Johns Hopkins Hospital, now removes every portion of the tubes, ovaries, and broad ligament ; dissects up and catheterizes the ureters, thus avoiding their injury ; ties the anterior division of the internal iliac instead of the uterine artery, and removes all accessible lymphatic glands. That, though the mortality from the surgery is greater, yet recurrence of the disease is less frequent. Polk and others have done the same operation. My comment is this. In any case in which the lymphatic involvement by the disease has reached these boundaries, it has, in the nature of the case, gone further. It will at least have reached the retroperitoneal and lumbar glands. Thus, ultimate cure by the procedure is impossible. In a case where the disease has not so extended, this much more greatly prolonged and much more dangerous operation is unwarranted.

Primary cancer of the body of the uterus is rare, but when diagnosticated and operated on early a cure may be expected. When cancer of the cervix commences in the columnar epithelium of

the canal, the disease may be assumed to have invaded the corpus very soon after its manifestation in the cervix; and if there is not manifestation of invasion of the lymphatics in the broad ligament, vaginal hysterectomy should at once be done. These cases are likely to do well. If the disease commenced in the pavement epithelium of the intravaginal portion of the cervix, and has not yet reached the cervico-vaginal junction or extended down the vaginal wall, hysterectomy or high amputation of the cervix, preferably the former, should be at once done, and the prospects of permanent cure are good. But if in such a case the upper portion of the vaginal walls has been involved, hysterectomy will be unavailing. The disease has in such a case positively involved outlying tissues and lymphatics beyond the possible field of your operation, and to cut through such diseased tissue only hastens the spread of the disease in adjacent tissue, and probably promotes the invasion of distant parts. In these cases the use of the cautery, after the method of Byrne, of Brooklyn (whose admirable work has not influenced the profession to the degree that its merits warrant), should be resorted to. I have been astonished at the arrest of the progress of the disease and the general improvement of the patient's condition from this treatment in the class of cases above mentioned. Beside, none of the evil consequences attending hysterectomy in these incurable cases, to which reference has been made, follow. And then the treatment is easy of application. It does not require the services of a specialist. The only rule is, *destroy all diseased tissue*, even into sound tissue, within the bounds of safety. By such means, if, perchance, you have been mistaken, and the disease does not extend beyond the field of cauterization, you have cured your case quite as certainly as though you had done the more radical operation.

I have obtained in many cases equally good results from the use of that old remedy, pencils, or, still better, cotton tampons, well charged with chloride of zinc. Of course, caution in protecting the vaginal walls from the agent must be exercised. The slough secured must be thorough. It will be completed in about fifteen days, when, if indicated, other points must be touched.

Dr. Crofford.—This subject is so important that I am prompted to ask Dr. Reamy one or two questions. In a case of epithelioma of the cervix seen very early, when there is a mere

spot on the cervix, do you not believe that you will have as great immunity from high amputation of the cervix or from the thermo-cautery as from total extirpation?

Dr. Reamy.—If we have an epithelioma of the cervical canal commencing in columnar epithelium we may be suspicious, and we will be justified in assuming that the disease has gone up into the body, although it may not have done so. But in such a case I would do hysterectomy. If, however, there is a small-sized neoplasm confined to the pavement epithelium on the outside, if it were the case of my own wife, and I could not detect evidences of disease elsewhere, I would ask some one to remove simply the cervix, and would regard it as the preferable operation.

Dr. Crofford.—In case the disease has extended up the endometrium into the uterus, by bringing out the whole interior, destroying the mucosa and epithelial lining, do you not believe you would have as great immunity from it as from hysterectomy?

Dr. Reamy.—I do not believe in that case we would have greater immunity than from hysterectomy. I assume in such a case, however, that the disease has not extended to the outlying lymphatics. If it has, the woman would not be cured by the hysterectomy.

Dr. Crofford.—A prominent European operator has removed the uterus seven or eight hundred times in any and all conditions. He has removed the uterus eighty-five times for cancer, and has had eighty-four continuations of the disease.

Dr. Reamy.—I would like to add a few additional remarks on vaginal hysterectomy. I now do not, as formerly, stitch either the anterior or posterior flaps of the peritoneum, if you may so call them, after I have removed the uterus, nor do I stitch the peritoneum to the vagina when I open, in order to prevent turning up during operation, as has been directed. I do not stitch anything. I simply ligate or clamp the vessels. I leave the opening in the peritoneum which is made by the operation entirely undisturbed. I am aware that this will be considered a step backward—surgical heresy—but I cannot help it.

By following this method of treatment I have not had a solitary case of prolapse of the intestines through the opening. You have immediate and perfect drainage. I consider first drainage the most important in these cases. It takes but little gauze to prevent the intestines from descending. Elevate the hips pretty

well—and I do not mean by this that they shall be elevated above the level of the shoulders—pack the gauze loosely, not extending the upper portion of the gauze beyond the level of the uterine arteries. Some operators pack gauze too tightly. There are three objections to this: First, it does not drain so well. Second, it prevents the rapid and perfect coaptation of the divided parts. Third, it prevents closing off of the peritoneal cavity, which takes place in a few hours if left undisturbed. It prevents union by first intention in structures related to it, and it is likely to set up inflammation from irritation, and finally it is more difficult to remove the gauze. In examining these cases one and two years subsequent to operation, comparing after different methods of stitching peritoneum, I have found the parts more natural if not closed, if left alone. In ordinary cases, where the disease is confined to the uterus, and you leave an opening, you will find that in six weeks after the operation is performed (in many cases in less time) the field of the operation is well closed. I have been curious enough in the last two years to examine a considerable number of cases where I have made the operation in this way.

Dr. Crofford.—How long do you leave the gauze in?

Dr. Reamy.—I leave it in two or three days usually; in some cases, soon after removal of the clamps. I never remove gauze before removing the clamps. The gauze, being placed after the clamps, does not interfere with their removal.

In answer to the inquiry, I am in the habit of leaving clamps fifty hours. I prefer the large straight clamps, such as are used by Segond, Jacobs, and others. The tissue is clamped as tightly as we can possibly clamp it. I think it an important point in connection with the operation. Do not clamp the tissue simply enough to be assured that you have arrested hemorrhage, but clamp it until you are positive that all of the tissue in the clamp will be absolutely necrosed speedily. Do the same thing with the ligature. It is important, in my judgment, to do so. If silk is strong enough, and you are certain you cannot break it, include in one ligature only so much tissue as will permit the arrest of all hemorrhage, capillary and otherwise. Thus, the death of tissue and consequent sloughing will be limited to the tissue involved in ligation.

Again, I would not have the field of operation washed out

with warm water or any other thing unless there were special symptoms to indicate sepsis, or offensive discharge, and it is seldom that such symptoms arise.

Of course, gentlemen, you will understand that what I have said as to closing the peritoneal flaps, and the after-conditions observed, applies to cases in which hysterectomy was done for other conditions as well as for cancer. Indeed, most of the comparisons as to the ultimate vaginal conditions were made in subjects who had not suffered from cancer.

Dr. Milo B. Ward, of Kansas City, Mo. (by invitation).—I was greatly interested in the paper that was read this morning, and I do not rise to enlighten this learned body in regard to anything that I may know about hysterectomy, but there were one or two points which I think were not properly elaborated. One is, that we cannot always depend upon the amount of hemorrhage that a woman may have as a diagnostic feature in cancer of the cervix. Very frequently these cancers commence without any history of hemorrhage. In the beginning there may be a hemorrhage resembling ordinary menstruation, and yet the patient has carcinoma of the cervix, which will mean death unless the uterus is promptly removed.

The question of the technique of hysterectomy is one in which I am deeply interested. I am strongly opposed to the clamp method. I believe that when it is necessary to use clamps in order to perform a hysterectomy the operation should not be done. If the clamps are used, because of the spread of the disease to neighboring tissues, then there is very little hope that an operation will result in recovery. The clamp method seems unsurgical to me, and may mean a great deal of suffering to the patient, and I do not believe it should be used.

Dr. Reamy.—May I correct an impression that may have gone out from my previous remarks? When I spoke of the use of clamps I did not mean that I employed them in preference to the ligature in any case, but in some cases I used them because the case was so far advanced that I could not use the ligature. They were used simply to complete the operation. I would more likely use ligature in a complicated case than clamps.

Dr. Ward.—The method that Dr. Reamy recommends of not closing the vaginal vault, and doing nothing whatever with the peritoneum in front or behind, but leaving it all open, is one that

I do not approve of. It seems to me that the stumps of the broad ligament should be brought down and fastened to the anterior and posterior vaginal walls with the ligatures on the stumps in the vagina. In this way we have no chance for sepsis, unless infective material is carried in during the operation. When the ligatures come away we have a smooth vault, and there is no trouble in the future. They will come away in a few days if tied by strong but small-sized silk.

The question of using gauze is an important one. I have heard of surgeons using gauze for drainage and leaving it *in situ* for four or six days. That sort of practice seems a little strange, because in all cases I believe the gauze should be removed at the end of twenty-four hours. It should never be allowed to remain more than thirty-six hours.

The question of infecting the intestines is another important one. I believe this can be avoided if we do not open the peritoneum in the cul-de-sac of Douglas, but leave it *in situ* until the last step of the operation. Use the scalpel to separate the cervix from the anterior and posterior walls, carry up the bladder with retractor, ligate as you go along, put two ligatures on each side in the region of the uterine arteries, then open the anterior wall and bring the uterus forward, and ligate from above downward. When the ligatures are all applied separate the uterus from the posterior peritoneum. The intestines are then out of the way, and you avoid the necessity of putting any gauze into the peritoneal cavity, and you have a clean field all the time. There is no danger of sepsis due to the cervix coming in contact with your manipulations in removal of the uterus. I think the technique of the operation has been discussed freely enough. I want to say one thing, however, about hysterectomy for cancer. I do not believe hysterectomy for cancer of the uterus amounts to very much if the disease is far advanced. If the uterus is fixed at all, it is a questionable operation. In those cases where there is much destruction of the uterus I believe thorough curettement and use of the Paquelin cautery is a treatment that promises the best results. I have had a number of cases of that kind, two during the last year, in which I could not remove the uterus on account of the great destruction of the organ, and I used the curette and Paquelin cautery. These patients are still well, and seem likely to outlive the operator.

Dr. Reamy.—I would like to inquire whether it does not take the doctor quite or nearly as long to do the toilet of the peritoneum by his method as it does to perform the entire operation.

Dr. Ward.—I can do it in a shorter time than I can tell you about it. (Here Dr. Ward demonstrated his method.)

Dr. Bovée.—I did not recognize this forenoon that the technique of hysterectomy for cancer of the uterus was to be considered in the discussion; but, so long as it is, I would like to mention the method that I usually adopt for getting the uterus out. I first enter the peritoneal cavity in front of the uterus, do an anterior colpotomy, and draw the fundus of the uterus and appendages down into the vagina; I commence my ligation of the broad ligament at the outer side of the ovary, work downward on the broad ligament toward the cervix and on down through, cutting the lower part of the broad ligament and the posterior vaginal wall last. This is a rapid operation, a clean one, and I think a more thorough one than operating from below upward.

A CASE OF TETANUS FOLLOWING A SURGICAL OPERATION.

By F. D. Thompson, M.D.,
Fort Worth, Texas.

On April 12, 1896, Mr. W., twenty-one years of age, white, American, with a good family history, whose residence was in the cattle-growing region of West Texas, was admitted to the St. Joseph's Infirmary at Fort Worth, Texas. He was found to have an extensive varicocele, and was brought to me by his father, who is a physician, for the purpose of having the radical operation for varicocele performed on him. This condition had existed for four or five years, and I had examined him about six months prior to that time.

On the afternoon of the day of his admittance to the Infirmary I prepared him for the operation by shaving the pubes and scrotum; thoroughly scrubbing the field of operation with soap and water, and a bichloride solution (1 to 1000), then with ether; the scrotum was wrapped in iodoform gauze, and a bandage adjusted to keep it in place. The next day at 11 o'clock, an anæsthetic (chloroform) was administered by Dr. D. R. Fly; the field of operation was again prepared as on the previous day, except, of course, the shaving. The instruments had been rendered surgically clean by having them steamed for twenty minutes prior to the operation; the already prepared silk was boiled for thirty minutes in a 5 per cent. solution of carbolic acid just prior to the operation, and the hands of myself and assistant, Dr. J. W. Irion, rendered aseptic in the usual way. The open operation was chosen; the scrotum laid open, the vas deferens was located and pushed to one side and given in charge of Dr. Irion; the enlarged

veins were ligated at the upper end of the scrotum, and again just above the epididymis; the section of veins between the ligatures was removed and the ends brought together *en masse;* the incision in the scrotum was closed with silk sutures, and the young man put to bed. He was quite comfortable after the operation, and progressed nicely and uninterruptedly for eight days. On the fourth day the dressings were taken off and the sutures removed. The incision in the scrotum was found to have healed beautifully, without a drop of pus along the line of incision or about the stitch-holes. The scrotum was redressed. The father of the young man returned to his home on the eighth day after the operation, and the young man was feeling so well—not having had an unpleasant symptom—that he wanted to return with his father, but it was agreed that he should remain a week longer at the Infirmary.

On the morning of the ninth day after the operation, on the occasion of my usual visit, I entered the young man's room and asked him how he felt; he said he felt well, except he had taken a little cold during the night; that he could not open his mouth very well, and there was some stiffness about the muscles of his neck. I very quickly made a diagnosis of the beginning of tetanus, and wired his father to that effect. The young man grew rapidly worse; in fact, the disease extended more rapidly and with more violence than any case of tetanus that it has ever been my misfortune to witness. His father was not able to reach Fort Worth until the afternoon of the next day—which was the tenth day after the operation. Inasmuch as it was apparent that he would die very soon unless the disease could be modified in some way, I determined to open up the scrotum and remove the small mass containing the ligatures as well as the testicle on that side. However, there was no swelling of the scrotum, epididymis, or testicle—that is, of any consequence; a little thickening where the veins were brought together. He was carried to the operating-room and chloroform administered, the scrotum reopened and its contents on the left side removed,

including the testicle. The specimen was handed Dr. W. A. Adams, who made a careful examination of same, but did not find a drop of pus or any unnatural appearance connected with it. A microscopical examination was not made. The patient died the next morning, April 24th, less than three days after the first appearance of tetanus.

I have been connected with St. Joseph's Infirmary for eight years, and this is the only case of tcanus that has ever been in the Infirmary since my connection with it. We have a railroad ward at the Infirmary, and do the practice for five railroads, and have, therefore, had almost every conceivable railroad injury, from a mashed finger to a broken spine, and yet, as before stated, not a case of tetanus.

During my eight years' residence in Fort Worth I have seen only two other cases of tetanus, and these were in consultation in private practice. The traumatism in one case was caused by the sticking of a nail in the foot; in the other case, the sticking of a sliver in the sole of the foot from the porch-floor of a farm-house.

The feature in connection with this case that is hardest for me to understand is how this patient was infected with the bacillus of Nicolaier or the bacillus tetani.

DISCUSSION.

Dr. Richard Douglas, of Nashville, Tenn.—Mr. President: I was very much interested in the doctor's paper. I sympathize with him. These cases are very rare, indeed, and they occur sometimes when every seeming aseptic precaution has been taken. I would like to ask the doctor whether he used silk or catgut.

Dr. Thompson.—Silk.

Dr. Douglas.—I have myself, in removing a small growth, used catgut which was impure, I am sure, and which resulted in tetanus and death. The operation was insignificant. Therefore I have a fellow-feeling for Dr. Thompson in his distress. His practice was wise in opening the scrotum, at once exposing

it not only to light, but to the atmosphere, and under such conditions the bacilli tetani does not flourish. I should have resorted to the same procedure were the case mine. He said nothing about the use of drugs in this case. I suppose he did everything that is recommended. We will meet with these cases now and then in our practice, and they will cast a shadow of gloom over us. We should learn the lesson never to speak too positively, too assuringly, no matter how small the operation we undertake. It is one thing to read a paper before a body of this kind detailing a brilliant array of cases, or describing a new method, and receive the applause of the members, but it takes a brave man to report a death.

Dr. George J. Engelmann, of Boston.—Dr. Thompson is certainly to be congratulated on being brave enough to report this fatal case. I heard of a case of tetanus treated successfully with antitoxin. The patient had a rusty nail in the foot, which was the cause of the disease. I regret I have no details of the case. These cases are comparatively rare.

Dr. Thompson (closing the discussion).—Just a few words in reference to the case. The report was very concise. I appreciate very much the remarks of Dr. Douglas. In tetanus the bacillus or germ which produces the disease does not of itself extend far from the point of entrance, but generally generates or gives rise to other poisons—the tetano-toxin, tetanin, and spasmo-toxin, the three poisons that permeate the system and are thrown off from the germs themselves. As it is a fact that the germs of tetanus would not live in the open atmosphere, the scrotum should be opened up and its contents removed, hoping to get rid of the germs that may have been introduced, as well as removing the edges of the former wound that was made in the scrotum. This was done from our knowledge of the pathology of the trouble and from the cases referred to. In one of the cases I saw in consultation that had a sliver in the foot, it was thirty-six hours after the beginning of the disease. The case was apparently a severe one, and I had witnessed, a few weeks before, the death of a gentleman from the introduction of a nail in his foot without any operative procedure having been performed except an opening along the track of the nail. But in the case of the woman with a sliver, I felt that I should do more than resort to medication. At that time, which was seven

or eight years ago, amputations were being done occasionally for tetanus, also division of nerves and nerve stretching. I cut down on the posterior tibial nerve, stretched it sufficiently to paralyze the foot, having first wrapped it in antiseptic dressings to protect the field of operation over the nerve, thoroughly cleansed the parts, then sealed up the fresh wound and laid the foot open along the track of the sliver, curetting it and washing it out thoroughly, then packed it with gauze, and treated it as an open wound. From the time she came from under the influence of the ether she never had another clonic spasm. The tonic spasm continued. She finally got well.

Dr. Adams was sent for to see a man who was brought from the country with a mashed foot. The patient had gangrene of the foot and tetanus. The odor was so offensive that the doctor could hardly stay in the room. He recommended cutting the foot off, saying that the man was going to die anyway. The patient was anæsthetized, his leg was cut off, but he recovered. These were the facts before me in the case that terminated so unfortunately. Were we to report more of our failures, they would be of as much advantage and use to us as some of our successes.

OVARIOTOMY IN THE AGED.

By A. Morgan Cartledge, M.D.,
Louisville, Ky.

It is not my purpose to discuss in detail neoplastic developments in structures supposed to have reached the quiescent or annihilation stage of retrograde metamorphosis, nor to dwell upon any special features of operative methods in very old women who are the subjects of ovarian cysts.

I merely wish to place on record a case especially interesting as the result of the advanced age of the patient and the easy manner of her convalescence from the operation of ovariotomy. On May 10, 1897, I was requested by Dr. C., of Illinois, to see his mother-in-law, Mrs. W., born October 29, 1816. Married fifty-six years; mother of ten children; no miscarriages. She was never a strong woman, but did not remember to have had any serious illness. Passed the menopause at the age of forty-nine, normally.

Eighteen months before the time of my seeing her, or about January, 1896, her family noticed some abdominal enlargement, and soon thereafter she complained of the usual pressure symptoms of an abdominal growth. Latterly, the gastric and digestive disturbances from pressure had been very troublesome. Emaciation and ovarian expression appreciable, but not marked. An examination revealed the abdomen well filled with an encysted growth, which was diagnosticated ovarian.

Naturally, the great age of the patient, eighty years, seven months, and fifteen days, made the decision as to operation a debatable one. I was aware of the case of Homans, and one or two others, of ovariotomy in women of such extreme

age, and determined, if the general condition justified such a course, to operate. Fortunately, our patient, aside from her age, had every reason for demanding an operation. Her general physical condition was unusual for a woman of her age, and while always frail, she was very active and maintained this activity to a remarkable degree in her declining years. Another feature (I take it of great importance) in deciding the question of operation in such a case was the condition of the intellect. Mrs. W. was very unusual in this regard, being possessed of the mental capacity of the average woman of sixty-five. She had been accustomed to taking long walks, reading the morning papers with keen interest. She was much loved, and in every way an active member of her household.

An operation was deemed justifiable, and a frank statement of her condition made to the patient. She unhesitatingly accepted the operation, which was performed May 12, 1897. Chloroform was the anæsthetic employed. The cyst (true ovarian) originated from the right ovary, was multilocular, and weighed about forty pounds with fluid. There was slight adhesion to the anterior parietes and omentum. Time of operation, fourteen minutes. The remaining ovary was not larger than a small bean, but could be recognized as such; the uterus about the size of the thumb. There was no appreciable shock; the pulse about 100 at the beginning of the anæsthesia, and in the eighties when the operation was completed. Her convalescence was as easy, if not the easiest I have ever seen after an ovariotomy. No vomiting; little pain; sleeping five hours the first night. Her condition was practically normal in forty hours. She sat up on May 26th, or fourteen days after the operation, and left the Infirmary May 29th, or the seventeenth day after operation. She is now in her eighty-second year. Has recently made three quilts, and is as active and happy as a woman of sixty-five.

Few ovariotomies have been performed in women aged eighty years or more, but the results have been so favorable in the reported cases that we are justified in urging operation,

if the general condition warrants, Homans's case at eighty-two years and four months, Owens's at eighty, and Matthew Owens's at eighty-seven (*Lancet*, 1895), being the most prominent. In the *Johns Hopkins Report*, 1894, vol. iii. page 509, are collated and tabulated, by Drs. Howard Kelly and Mary Sherwood, 115 cases of ovariotomy in women of seventy years of age, most of them being from seventy to seventy-four. The results about equal those in younger women. In 150 ovariotomies Dr. Kelly has operated five times in women over seventy.

I have operated seven times in women over sixty years; none over seventy, except the subject of this report.

OPERATIVE TREATMENT OF ENLARGED PROSTATE.

By H. Horace Grant, M.D.,
Louisville, Ky.

It is contemplated in this paper to review the operative treatment of enlarged prostate; but as such treatment cannot be routine, but must apply to different forms of enlargement, an intelligent idea can be obtained only by viewing the pathology and diagnosis also.

Briefly stated, we may regard prostatic enlargement in its chronic form, as inflammatory, fibrous, and adenomatous, cystic, and malignant.

The first, or chronic parenchymatous prostate, Gouley[1] says, is the most common form of old man's prostate, often very large, with calcareous formations in the acini—not a hypertrophy—no new tissue being added, but simply a hyperplasia of the virginal tissue. It is rarely seen before the fifty-fifth year, almost never before fifty years; occurs in something like 40 per cent. of men over fifty, but produces important symptoms in only about 8 per cent. of the 40 per cent.

Gouley[2] thinks this condition is largely gouty, of slow development, but progressive; a mild subacute inflammatory process at the outset, and symptoms once established tend to increase in severity by auto-irritation.

The prostate thus diseased may assume very large proportions. One case under observation, seen with me by the late Dr. Palmer, was found on post-mortem to be as large as a small cocoanut, and to have occluded both ureters by advance on the thickened walls of the bladder.

[1] Medical Record, October 24, 1896.

[2] Op. cit.

The second form: Fibrous tumors are rare, usually seen earlier than the inflammatory form. They less commonly produce symptoms unless they take on malignant degeneration. The same is true of adenoma.

Cysts of the prostate are rare, though retention cysts of the ducts or of acini are reported, and the same is true of hydatid cysts.

Malignant growths are uncommon, but may be either sarcomatous or carcinomatous—primary or secondary.

The differential diagnosis of these conditions is difficult. When once it is clear that prostate enlargement exists in such a degree as to require treatment, malignancy must be excluded before any operative treatment applies. Pain, rapid increase in size, with the cachexia, soon establish the diagnosis, though it happens at times the neglect of the patient puts him in so serious a condition on first examination that the history cannot help to clear up satisfactorily all questions. Harrison, in his *Bradshaw Lectures*, refers to carcinoma as by no means so uncommon as to be left out of calculation. He has seen little hemorrhage or ulceration in carcinoma of the prostate, but usually distressing urinary symptoms, with pain radiating down the thighs and up the back. He thinks malignant disease is usually seen before fifty years. The other varieties are hardly to be differentiated positively, but are to be suspected in the cases giving trouble before fifty years. These points being carefully considered, the question arises, What comes before any operation, in the way of palliation? Most recent writers upon the subject, notably Gouley,[1] Harrison,[2] Alexander,[3] Pilcher,[4] Cabot,[5] etc., advise systematic catheterization until either this becomes too difficult, or else intractable cystitis, with all its attendants, makes something further imperative.

Operative procedure seems to include as practicable and promising the following:

[1] Op. cit. [2] Op. cit.
[3] New York Medical Record, December 12, 1896.
[4] Annals of Surgery, June, 1896. [5] Annals of Surgery, September, 1896.

Internal prostatectomy, by Mercier's instrument.

Suprapubic section and prostatectomy.

Perineal enucleation, combined with suprapubic section.

Castration.

Vasectomy.

I omit from consideration the methods of Bier and Willy Meyer (*Annals of Surgery*, June, 1896), of ligation of both internal iliac arteries—a step out of the question—and also the various modifications of the above-mentioned procedures.

1. Internal prostatectomy in any concealed way is so unsatisfactory and so dangerous, even without taking into account its rare suitability, that it can be dismissed without other comment.

2. Suprapubic section, with avulsion and such after-treatment as the case demands, must long contend for the first place in the list of radical operations, because it allows of free exploration of the obstruction and permits its removal under the eye. The addition, in such cases as demand it, of perineal drainage or a permanent suprapubic fistula, make it a most satisfactory procedure, when chronic cystitis, suppuration, suspicion of stone or tumor complicate the enlargement. The McGill operation with McGuire's fistula, or Belfield's perineal drainage, will meet these indications more effectually than any other.

The following cases show how futile other operative steps would have been in the condition :

Dr. A., aged seventy, had suffered for three years with frequent desire to urinate, with latterly some mucus, perhaps pus, and after catheterization, blood at times in the urine. For two years he was under the observation of a skilled genito-urinary specialist, who frequently washed out the bladder and gave him diluents and other internal treatment. For the past year he used the catheter exclusively, and every few hours suffered a spasm of the bladder, with great pain; his prostate was very large, and no solid instrument could be got into the bladder, nor, indeed, a flexible catheter be made to pass except in the erect posture. Section was made on the

empty bladder without either bag or staff. Three phosphatic stones were found down behind the intruding prostate, each about the size of the terminal phalanx of the thumb. Permanent drainage was instituted by tube in the wound. Prompt recovery ensued, and now, a month after the operation, the patient wears a cork in the end of the drain, and empties the bladder every three or four hours, and is a well man attending to his business.

Case II.—W. C., white, aged seventy-one years. Has suffered for two years with increasing frequency of calls to urinate. Suffers but little from pain. The past few months he had chills and some fever following; later he became bedridden. I saw him late in October. He had some evidence of sepsis; was urinating every thirty minutes, day and night—about the normal quantity. To my surprise, there was little residual urine. The prostate was moderately enlarged. He improved in general condition under treatment, but the frequency of urination was not lessened. A suprapubic section done on the fourth of this month disclosed a projecting prostate with an abscess which held about two ounces of pus. He has had no temperature since the operation, and sleeps all night.

3. Perineal section and enucleation as done by Nicoll and Alexander promise even more than suprapubic, if the future bear out the brilliant beginning. Dr. Alexander[1] describes his operation in the following language: "The patient being anæsthetized, the bladder is emptied by catheter, and is then distended with borax solution, from eight to ten ounces being sufficient in most cases to bring the organ well above the pubes. I have discarded the use of a rectal bag. The bladder is then exposed by vertical incision between the recti muscles, and two retraction sutures are introduced between its walls. Between these an opening is made into the bladder, large enough to allow the operator to insert two fingers. The bladder and the projecting portions of the prostate can now be examined thoroughly. The suprapubic opening is then covered with gauze and the patient placed in the lithotomy

[1] Medical Record, December 12, 1896.

posture. A broad median grooved staff is passed into the bladder through the urethra and held by an assistant. The membranous urethra is then opened by a median perineal section, the floor of the urethra being thoroughly cut from just behind the bulb back to the apex of the prostate. This must be done thoroughly. The staff is then withdrawn and the gauze removed from the suprapubic wound. The surgeon now washes and disinfects his hands. Two fingers of the left hand are then passed into the bladder through the suprapubic wound, and by these the prsotate is pressed downward into the perineum. With the forefinger of the right hand the surgeon begins the enucleation, which is performed entirely through the perineal opening. The fibrous sheath of the prostate covering its posterior and inferior surface is broken by the finger and the capsule entered; the entire prostate is shelled out from within its sheath by digital dissection. The inferior and posterior surfaces of the prostate should be first separated from the capsule. The mucous membrane of the bladder and prostatic urethra, covering the enlargement with the underlying muscularis, is stripped up from the part to be removed, but is not opened. The lateral lobes are first removed, after which, if there is a middle enlargement, or a projecting tumor or tumors, these can be pressed downward into the perineal wound and enucleated in the same manner. During the enucleation the prostate can be drawn down into the perineum by forceps, and for this purpose I use an ordinary ring sponge-holder with a strong lock in the handle.

"After removal of all the prostatic growths the lower wound is flushed with 1 to 5000 bichloride solution, a perineal tube is inserted into the blader, and a rubber drainage-tube of moderate size is placed in the bladder above the pubes. The retraction sutures are removed, and the bladder is allowed to drop back behind the pubes. The upper part of the suprapubic wound is then closed by sutures, and a dressing of gauze pads applied, which is perforated to permit the drainage-tube to pass.

"The after-treatment consists in daily washings of the bladder, the fluid being injected into the suprapubic tube. All urine flows out of the perineal tube. The upper tube is removed on the fourth day, and the lower three days later, after which the bladder is washed by catheter through the perineum for a few days. A full-sized sound is passed at the end of the second week, and then every five days until the perineal opening closes. Both wounds have usually healed in the course of five weeks."

4. Castration, as originally suggested by Dr. William White, has taken a strong position by virtue of many reported successes. Though Dr. White does not definitely settle upon an explanation of its efficacy, it has been demonstrated, in a most unequivocal manner by many operations, that atrophy of the prostate and relief of symptoms follow the operation in about the same proportion of cases as are relieved by prostatectomy, while the mortality is about the same. Dr. Cabot concludes, in his paper before the Surgical Association,[1] after an extended investigation, that the field of prostatectomy is larger. Though his conclusions are not wholly shared by some surgeons, it is still a question of submission to a trying loss, and it is to be borne in mind that both the vigor of the patient and his mental equilibrium are believed to be endangered apart from the severity of the operative steps. Time is needed to determine how important these influences are. On a certain character of cases castration has no effect, especially fibrous and adenomatous tumors.

5. Vasectomy, or excision of a part of one or both vasa, suggested by Reginald Harrison,[2] appears to meet the same indications, though less promptly, and to be less distressing to the patient. Harrison explains, in his *Bradshaw Lectures*, that ligation and excision of about one inch of the vasa should be done on one side only. If improvement is not satisfactory in a month, it should be done on the other side. In a few months at the latest, atrophy of the testicle will appear, and

[1] Annals of Surgery, September, 1896.

[2] British Medical Journal, September 23, 1893.

the same functional results will obtain as after castration. The operation is much less severe than castration, but the effect on the mind does not appear less frequent. Beside, the delay is so great in many cases as to exclude such an operation in the premises.

In the *Journal of the American Medical Association* for March 14, 1896, Dr. Kane, of Pennsylvania, suggests the introduction of the long curved prostate catheter of silver, which he ties in the bladder, allowing it to remain in at least three days, with the patient on his back in bed, quieted with opium, if required.

Dr. Kane reports success in several cases by this method. Most of us have employed the somewhat similar step of tying flexible bougies in deep urethral strictures, with very good results.

Considering all these conditions and influences we are led to conclude :

First, that in malignant disease any operative step except palliative suprapubic drainage, even if based on an error of diagnosis, is a serious mistake.

Second, that in myomas, fibromas, and adenomas it is yet uncertain that good will follow castration, and, moreover, that such conditions render enucleation by Alexander's method very difficult and perhaps not feasible ; hence—when interference resists catheterization and is not remedied by the permanent catheter, as suggested by Kane—suprapubic section and removal of the projecting portion, if practicable, or the permanent fistula of McGuire, instead, is the wisest course.

Third, in conditions including stone in the bladder, suppuration in the gland, and the suspicion of intravesical growths, exploration by the suprapubic method offers the best insight into the nature of the lesion, as well as most hopeful prospect of relief.

Fourth, inasmuch as castration, distasteful even of suggestion, is less acceptable to men under sixty-five years than later, it appears that in the commonest form of enlargement, the chronic parenchymatous, to which the operation of Alex-

ander is especially appropriate, will be best treated by this method, which, if it bear out the promise of the present, will surely take a high place in the future, as it has almost no objection, aside from the seeming gravity of the step.

It is to be borne in mind that the depression of desperate and long-protracted suffering may lead a patient to consent to the mutilation of castration, when, after relief, regret may tend to grave dissatisfaction and even melancholy. Hence, though apparently a less serious and certainly a more easily executed operation than either the Alexander or the McGill, it is to be looked on as less appropriate than either, other things being equal, before the sixty-fifth year, and perhaps not to be even suggested when the Alexander method can be applied.

DISCUSSION.

Dr. T. F. Prewitt, of St. Louis, Mo. (by invitation).—Mr. President: I had not the remotest idea of making any remarks before this Association on this subject, because I am not a member. However, I have listened with great interest, and was very much pleased with the paper. I have operated in several cases by the suprapubic method, and I must say I think it is decidedly preferable to the other method. I have operated once or twice by castration, and one patient that I operated upon some time ago reports good results. An old gentleman, sixty-five years of age or more, had suffered intensely for several years until he was ready to submit to anything. I suggested to him suprapubic cystotomy, castration, and so on. He thought castration would be a less serious operation than opening the bladder. At all events, he submitted to it, and his wife also gave her consent freely. I operated in that case, and the result has been satisfactory. In one case I have tried resection of the vas deferens upon one side, and the immediate result has been fairly good. I have not seen the patient for a month, but he has experienced much relief. We accomplish the same purpose by castration as by resection of the vas deferens. The operation was done with the idea that if the vas deferens was resected upon one side, it would lead to atrophy of the prostate on that

side, and that when there was no middle-lobe projection it might reasonably lead to relief. In this case there has been considerable relief; the man is very much better, although I have not seen him for some time. Only a few days ago I operated upon an old man for enlarged prostate; there was no great enlargement of the prostate gland. The trouble here was middle-lobe enlargement. Being convinced that I could not reach it, I proposed a suprapubic cystotomy, and in cutting down upon it I found projecting a tumor, remarkably distinct, almost pedunculated, I was going to say, making a plug in the internal opening of the urethra like a cork. I removed that, and he is still in bed. He is doing very well, and I am sure will be completely relieved. I stretched the internal urethra with my finger.

I operated some three or four years ago upon an old man, seventy-two years of age, who had enlargement of the middle lobe to the extent that it projected against the abdomen. I could feel it distinctly external. In that case I peeled out three or four large tumors, just like fibroid tumors of the uterus. They rested up against the abdominal walls in front, were easily felt and removed. They completely blocked the bladder. While the old man is not entirely relieved, his suffering is greatly mitigated. I peeled out these tumors, and the connective tissue from which they were peeled seemed to make a bar across. I found he was not completely relieved, and still had to use a catheter. Later, I made an incision, with the hope of getting rid of this band, but I do not think it did him any good. He still has a suprapubic fistula, but his suffering is not great, the only annoyance being the suprapubic drainage.

About seven years ago I operated on an old man who lived in Kansas, removing the middle lobe of the prostate, and I received a letter from him some time ago in which he expressed the utmost gratitude, saying that he was completely relieved by the suprapubic operation and the removal of the middle prostatic lobe.

I have had no experience with Alexander's operation in enucleating the prostate, but I think there are certain conditions in which it would be an excellent operative procedure, especially in those cases where the trouble is in the lateral lobes, and where there is no middle lobe to be removed.

So far as castration is concerned, my experience is limited,

and I must say rather repugnant. The idea of castrating a man, if any other operation will relieve him, is very repugnant to me.

Dr. Arch. Dixon, of Henderson, Ky.—Dr. Grant has read a paper on a very important subject, and, while I have not had much experience in this line, I have had some cases, and fully agree with him in many points. In others I do not. I want to say this: I do not believe we will find any patient under sixty years old who will agree to castration. I have never found one yet that would even listen to it. A man might listen to it, at the same time he would not submit to the operation. There is no question in my mind but that the suprapubic operation is the one to do in these cases, and I fully agree with Dr. Hunter McGuire, that this procedure gives more relief and causes less trouble, not only to the patient after the operation, but it gives less trouble to the surgeon when he does it, for the reason that we can get a trained nurse to take care of the patient. If we do a perineal section, it is difficult to do that.

I do not agree with Dr. Grant when he says that it is almost impossible to have a permanent fistula following a perineal section. I have a case under observation at present very much like the one reported by Dr. Grant, in which there is a permanent fistula. It is a great annoyance to the patient as well as to me. I cannot stop it. In this case I made a perineal section, and while the patient passes his urine without any trouble, still there is a dribbling, and there is a fistulous opening which I have been unable to close. I fully agree with him that the suprapubic operation is by far the best operative procedure in these cases.

Dr. James T. Jelks, of Hot Springs, Ark.—While I have enjoyed Dr. Grant's paper very much indeed, I cannot let it pass without a protest as to its conclusions. In the first place, let us take our bearings. There are two or three things that are settled beyond the peradventure of a doubt. One is that ligation or exsection of the vas deferens does produce atrophy of the prostate gland. There is no question about that. In the second place, these old men, many of them, simply exist to urinate. That is all. The only object they have in life is to empty their bladders. They exist in order to pass a catheter. If that be true, and I take it that nobody will gainsay the truth of the

proposition, anything we may do to alleviate their suffering is advisable. There is another thing we must consider, and that is, when we allude to hypertrophy of the gland. We sometimes attempt to treat tuberculosis or cancer of the prostate as though it were hypertrophied prostate, on account of not having made a careful differential diagnosis; and that is why failures occur. If we find an enlarged prostate, we jump to the conclusion that we have hypertrophy of the prostate; we operate by castration or vasectomy, and we get no beneficial results. In such cases we find that we are dealing with either tuberculosis or carcinoma of the gland. When the differential diagnosis is completely made, and we have the hypertrophied prostate as described by Thompson, there is no question about the fact that atrophy can be produced by resection of the vas deferens or by castration.

There is another point to be considered in connection with this subject, and that is these old men, while they have passed their sexual life, may like to preserve their testicles for esthetic purposes. We know that there are some old men who have not lost their powers for procreation at sixty-five, and hence they may wish to preserve their virility, and when atrophy of the prostate can be produced by exsection of the vas deferens or the ligation of it, it is our duty to give them that advantage.

With reference to the mortality: for exsection of the vas deferens it is about 19 per cent., while the mortality from castration is about 20 or 22 per cent. It cannot be possible that this mortality comes from the operation *per se;* hence, I take it, it comes from the anæsthetic—chloroform or ether; in old men, by reason of disease of the prostate and bladder, they have diseased kidneys, and hence they die from the effect of the anæsthetic, and not from the operation. It is impossible for castration or ligation of the vas deferens itself to kill twenty-two out of a hundred people. If, therefore, we make this operation by the use of cocaine, or Schleich's method of anæsthesia, the mortality should be *nil.* Dr. McGuire's operation of forming a permanent fistula above the symphysis pubis is practised by many surgeons; but in this class of cases I am an advocate of vasectomy in preference to either castration or the formation of a permanent fistulà above the pubis.

Dr. Grant (closing the discussion).—I have only a few words

to say. In the first place, if it is a fact, as statistics indicate, that 40 per cent of the men beyond the fiftieth year have enlarged prostates, and that 5 per cent. of the 40 per cent. have serious trouble, we are confronted with a problem for solution, and a very important one to us as men. The question I intended to present was, What is to be done when we are consulted by a patient who has symptoms of frequency of urination, together with enlarged prostate, in which the diagnosis is clearly made out to be one of moderate irritation of the bladder with the possibility of a stone, a tumor, or, as I reported in my paper, an abscess, which no method of diagnosis, aside from the cystoscope, can hope to clear up, and which it often fails to determine? These cases clearly demand first an accurate diagnosis, and that diagnosis is best reached by inspection under the eye or by the introduction of the finger. In those cases in which the urine is clear, in which it is evident that a considerable amount of residual urine remains in the bladder, in which evidently the amount of irritation or frequency of urination is not dependent upon cystitis, it is permissible to consider removal of the prostate without exploration of the bladder. But where evidences of cystitis or a suspicion of a foreign body, or a tumor, exists, it is not admissible to consider any other steps except the accurate determination of what is the matter. It is ridiculous to do either a vasectomy or castration for any condition except that of parenchymatous enlargement of the prostate. In a very large proportion of cases, while the patient presents himself early enough with parenchymatous enlargement of the prostate before involvement of the bladder has occurred to justify the hope of permanent recovery from simple castration, I look at the subject from a practical side. It seems to me there must be few cases in which it is justifiable to simply remove a portion of the vas deferens, or even to do a castration where it is consented to, because the diagnosis cannot be arrived at sufficiently early, or the consent of the patient cannot be obtained even if the diagnosis is made before disease of the bladder renders it unlikely that such a condition will be relieved by absorption of the prostate. The cystitis will remain; the residual urine, to a certain extent, will persist for a considerable time, and the patient will not be relieved. Ligation of the vas deferens, as I stated in my paper (perhaps Dr. Jelks did not

understand me) would accomplish the same thing as castration, but defer results four or five months, and during this time the conditions which give rise to the trouble would continue, and the patient would suffer from residual urine and its consequent cystitis, and it would be scarcely permissible to defer treatment that long. It goes without saying, that castration is repudiated by nearly all men under sixty-five years of age; it is highly repugnant to most men beyond this period. After castration is performed there is danger of its influence on the mind. In many instances the patient is distressed and worried, and while he may consent to having the operation done, after relief is afforded he greatly regrets it, and this regret may take the form of melancholia.

With regard to the mortality of this operation, it is influenced by the previous physical condition of the patient, due to the absorption of urinary products from the long maintenance of residual urine in the bladder. The operation of castration or vasectomy done on a hearty man is scarcely ever followed by death; but upon individuals broken down in health, it results in death, and this emphasizes the point that these patients are already so poisoned that their only hope of recovery is from the free escape of urine and irrigation of the bladder.

Dr. Dixon misunderstood me with regard to a permanent perineal fistula. I did not believe it could not be maintained, but that such a fistula was an undesirable affliction. I merely advocated what I believed to be the best thing for the patient, the establishment of an accurate diagnosis and the persistence of the fistula until the symptoms of chronic cystitis following enlarged prostate were relieved. My experience, as well as my reasoning, leads me to believe that in 75 per cent. of the cases it will be the wisest course. In 15 per cent. more it will be entirely excusable if it be proved afterward that 15 per cent. would have been relieved by vasectomy or castration.

SOME REMARKS ON EMPYEMA, WITH A REPORT OF TWENTY CASES.

By J. A. Goggans, M.D.,
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Ancient writers, from the days of Hippocrates and Galen, recognized and treated this disease by thoracentesis and thoracotomy. Still their knowledge of the pathology of the disease must have been quite limited. I regard empyema as a disease of far more frequent occurrence than it is generally supposed to be, and judging from the statistical reports, taking into account the etiology and pathology of the disease, two-thirds of all cases are of simple origin, most generally a sequel of pneumonia and presenting the characteristic pneumococcus of Fränkel and Weichselbaum. Therefore, from being a disease, as formerly held by Sir Astley Cooper and Dupuytren, almost always fatal when treated by surgical interference (the latter of these men even went so far as to say that he had rather die of the disease than to be killed by surgical interference), it has, under aseptic management, become most amenable to treatment. Now, since every case of empyema presents its own clinical phenomena, no single mode of treatment can ever be adhered to ; consequently, much more valuable information may yet be acquired by carefully studying the clinical history of each case.

The plan of treatment known as the surgical treatment is the one which has been most successfully employed. Even Hippocrates[1] evacuated pus from the pleural cavity by incision, by actual cautery, and by perforation of the ribs. It is

[1] Hippocrates : De Morbis.

said that we have no history of these operations from the days of Hippocrates for more than two thousand years, when Sédillot revived this mode of treatment. It was in 1850 that Trousseau first advocated the idea that patients suffering from pleuritic effusions, no matter of what character, should not be allowed to die without surgical interference. It remained, however, for Dr. Bowditch, of Boston, to place these operations on a sound foundation. Since the brilliant papers by Dr. Bowditch, one in 1852, one in 1853, and one in 1857, the surgical treatment of empyema has gradually become more popular, and the success that now attends it is quite astonishing. For twenty years, however, after Dr. Bowditch's last paper all were not indorsing the surgical treatment, as I will show later. There are many modes of removing pus from the pleural cavity: first, by aspiration and allowing the puncture to heal at once; second, aspiration followed by irrigation and allowing the puncture to heal; third, aspiration and irrigation followed by permanent drainage, known as Beulau's method; fourth, simple incision between the ribs followed by permanent drainage through the rubber drainage-tube; fifth, the operation of Estlander, which consists in the removal of a portion of the rib, in order that retraction of the chest-wall may be facilitated; sixth, the operation of Schede, which consists of removing quite a large portion of the chest-wall. I wish to abbreviate these methods to the fewest number possible, and will adopt the following classifications under two general headings:

1. The closed method, which consists in removing the pus by simple puncture and allowing the puncture to heal at once.

2. The open method, which consists in making a more or less free incision, or removal of a piece of rib, and the introduction of a drainage-tube to maintain the perfect evacuation of the fluid, to permit of irrigation, and promote free ingress and egress of air that has passed through an antiseptic dressing.

The relative value of these methods, viz., aspiration, rib-resection, free opening and drainage, can only be determined by statistics. The age of the patient and the pathology of

the disease present has much to do with the character of surgical interference. Dr. Tiffany[1] says that if the pus contains pyemic cocci the patient will die, no matter what the treatment may be. If the pus contains pneumococci or staphylococci, simple evacuation only is necessary. But if streptococci be found, rib resection and washing out should be practised. According to Koplik[2] there are many cases of both serous and purulent accumulations in the pleural cavities where no microbes are found. However this may be, the theory most generally accepted is that empyema, like all other suppurative conditions, is due to the presence of microbes; therefore, we are naturally brought to the following classification of empyema, based on etiology, pathology, and prognosis:

1. Simple empyema, as a result of the entrance into the pleural cavity, usually by accidental means, of any of the common pus-producing microbes, such as are in simple wounds, the introduction of a filthy needle, or rupture of a simple abscess.

2. Empyema as a result of or sequel of pneumonia, the pus present being infected with the pneumococcus of Fränkel.

3. We have cases of empyema as a result of the entrance of pus-producing microbes through the lymph-channels, as occurs in wasting diseases.

4. Empyema as a result of the entrance into the pleural cavity of the bacillus of tuberculosis.

5. We may have empyema developed in cases of general pyemia.

It will be seen that empyema comes near to being a symptom of quite a number of pathological conditions rather than being a distinct disease itself. Now, it is not my purpose in this paper to deal so much with the technique of the different operations for the removal of pus from the pleural cavity, but to point out, if possible, the particular line of treatment, guided by the age of the patient and the etiology and pathology of the given case.

[1] Transactions of the American Surgical Association, 1894.
[2] Koplik: American Text-book of Diseases of Children.

Statistical results in children cannot be favorably contrasted with those obtained in adult life. This difference in the percentage of mortality is explained by the fact that the etiology and pathology of empyema in childhood, in a vast majority of cases, are much more favorable to recovery than when the disease is developed in adults. According to my experience, and I think that it coincides with that of many other operators, aspiration has many advantages in a large majority of cases of empyema developed during childhood. It is a simple operation, can be performed without general anæsthesia, and the undeveloped condition of the chest favors lung and thoracic expansion. Besides this, statistics prove that aspiration is very frequently followed by recovery in this class of cases. The statistics of 175 cases give as a result only twelve deaths. But there is a difference of opinion as to the number of aspirations that should be performed before resorting to the operation of thoracotomy. I think, however, that the decision should depend upon the character of the fluid and the condition of the patient.

To illustrate this, I will refer briefly to my own cases, which are twenty in number, eight of which were under nine years of age, and twelve between the ages of seventeen and eighty-six years.

The first, aged seven years, was cured after eleven aspirations; the second, aged eight years, after three aspirations; the third, aged seventeen years, after one aspiration; the fourth, aged thirty-five years, after two aspirations; the fifth, a man, aged fifty-eight years, after three aspirations; the sixth, aged nine years, after three aspirations; the seventh, a man, aged eighty-six years, died after the third aspiration. The other thirteen cases recovered after the operation of thoracotomy. The ages of those cured by thoracotomy were as follows: Two of them were aged three years; two aged four years; two, seven years; one, ten years; two, seventeen years; one, twenty-two years; one, twenty-five years; one, thirty years; and one, forty years of age. In all of my cases cured by aspiration the disease was developed as a sequel of

pneumonia. In children the empyema is apt oftenest to be the result of pneumonia, and if the diagnosis is made early, before the patient is exhausted, many aspirations may be performed with safety before convalescence is established. Again, when the pus is quite circumscribed, and only a few ounces present, aspiration may be confidently performed. On the other hand, if the patient is already much emaciated, no matter what the age may be, the operation of thoracotomy should at once be performed.

You will observe that the results of operations on empyemic patients to-day are very much better than twenty years ago, when Professor Loomis, in his "Lectures on Diseases of the Respiratory Organs, Heart, and Kidneys," said "that the prognosis of empyema is always bad, and statistics show that among empyemic patients in whom spontaneous openings occur, about one in five recover, while among those in whom artificial openings are established, about one in eight recover."

A few writers have taught that it was unnecessary to remove all the pus by aspiration, but I think that we should remove as much as possible, lest fistulous openings be formed through the chest-walls or through the lungs. Still, all of it should not be removed if pain be complained of, for the operation can be completed on the following day, or within a few days. I wish to call special attention to the condition of empyemic patients just after the operation of thoracentesis. It is well illustrated in my cases, and I wish to mention it here. Take, for example, a patient aged from three to eight years, with the physical signs of empyema, a temperature of 103° F., pulse 120 to 160, and respirations from 30 to 60 per minute. Remove the pus by aspiration, and the following morning the temperature will be very near the normal standard, or, perhaps, a little subnormal, *and if recovery is to take place from this operation,* the pulse and respirations will also be very nearly normal, with but slight elevation on the following evening. If, however, there is to be a reaccumulation of the pus, and hence a necessity for repeating the aspiration, the temperature will be nearly normal, or even

subnormal, but the pulse will remain as high as 100 to 130, and the respirations from 40 to 60 per minute. From observations made during the progress of my cases, I have found that the rapid respiratory movement is the last symptom to disappear, and that there is no certainty in the success of the operation until the respirations and pulse fall with the temperature. My cases cured by aspiration had a pleuro-bronchial fistula, and two of them expectorated large quantities of pus. Others never expectorated pus, but there was always a considerable quantity of air that escaped into the aspirator after the pus had ceased to flow, proving that a pleuro-bronchial fistula existed.

Another point to which I wish to call special attention is, that the results obtained in my hands do not correspond with the idea advanced by Dr. T. H. Manley, of New York, in a discussion of this subject before the New York State Medical Society, October, 1893,[1] in which he opposed aspiration, stating that he employed it up to the time of the discussion in Paris, when Vernueil took strong grounds against it as being injurious. Dr. Manley said that he had found in looking over the history of his cases in which he had aspirated, that none of them had lived longer than three years.

My first three cases were operated on in 1889, and I have operated on seventeen others, either by aspiration or thoracotomy, and, so far as I know, all of them are living but two, one of these being eighty-six years of age at the time of the operation; and the other one, ten years of age, died two years after thoracotomy. This may be explained on the ground of difference in pathology of the cases contrasted. It must be remembered that whatever mode of evacuating the pus is adopted, cleanliness, early incision, and perfect drainage, with perfect ingress and egress of air that has passed through an antiseptic dressing, are the objects to be attained in the treatment of empyema. It has been said by good writers on empyema that "there is no danger of evacuating the pus too

[1] New York Medical Record, October 21, 1893.

rapidly by thoracotomy, since the air enters and equalizes the pressure." I have not found this to be true. I am inclined to the opinion that there are cases of accumulations in the pleural cavity where the fluid pressure is greater than the atmospheric pressure, and suddenly to evacuate all of the fluid in such cases would endanger the patient's life. In some of the cases on which I have operated I was compelled to evacuate the fluid slowly, and could not allow it all to escape from the pleural cavity at once.

I believe there is only a small proportion of cases where rib resection is called for; nor do I believe that the operations of Estlander and Schede are regarded so favorably as formerly. In order to perform the operation of thoracotomy by any method, a general anæsthetic should be used, and I am partial to ether carried to complete anæsthesia. The operation can then be performed carefully, the drainage-tubes can be adjusted with precision, and the dressing applied without inflicting pain. The incision should be large enough to admit the finger, to permit the free escape, not only of the fluid, but of any fibrous masses, or organic débris that may be present, which are apt to undergo decomposition, and thereby produce septicæmia and death. In most of my cases it was evident that the pleural cavity was almost obliterated within six or eight days after thoracotomy was performed, and, instead of producing dyspnœa and cyanosis, these symptoms rapidly disappeared after the operation. I used irrigations of sterilized water in most of my cases, and I am confident that they are irritating and injurious during the first two or three weeks following the operation. If the ribs are so close together that drainage cannot be maintained by simple incision and rubber tubes, or if from inexpansiveness of the lung, or from any other cause, the pleural cavity fails to become obliterated, the operation of Estlander affords the best chances for thorough evacuation of the fluid and subsequent drainage.

DISCUSSION.

Dr. A. M. Cartledge, of Louisville, Ky.—Mr. President: It is refreshing to hear a paper on the subject of empyema after talking so much about abdominal and pelvic surgery. The general surgeon encounters a great many cases of empyema. The doctor's paper in some respects is a little at variance with my experience, notably in the deductions as to the pathology of the disease. Most all of the cases I have seen have been the result of tuberculosis. So great has been the number of cases, proportionately, in my practice, that I am inclined to believe, with most modern authorities, that empyema is essentially a tuberculous process. The pneumococcus has been found in the discharges; nevertheless, the rule holds good that most cases of empyema are tubercular.

The next point I wish to speak of is the excellent results that the gentleman has secured by the use of aspiration. I believe the doctor aspirated about sixteen or eighteen cases.

Dr. Goggans.—No, sir. I think it was seven.

Dr. Cartledge.—All of the rest were incised, with or without resection of the rib. My experience in the empyemas of children coincides with his. I think empyema in children should be subjected to aspiration before incision, because the children in many cases make permanent recoveries. We have, again, a class of cases in which the fluid is not distinctly purulent—that is to say, under the microscope it is found not to contain pus-cells, but where it is in that transition stage between a serous effusion and ultimately a purulent one. In those cases aspiration seems to give permanent results. In adult cases, where there is pus, I should say that the best and most perfect surgery would result from incision and drainage. In every case where I have explored the pleural cavity, I have removed a section of the rib for the introduction of the tube. I agree with the doctor that flushings are dangerous. I concur with him, furthermore, in saying that when we have a tremendous accumulation of fluid in cases following pleuritic effusion, it is very much better to remove part of the fluid one day, and at subsequent times remove the remainder. I have had one death from the sudden evacuation of

fluid of this kind, due to sudden displacement of the heart, I presume.

I agree with all that has been said by the doctor, except that I look upon nearly all of these cases as tuberculous, and that would suggest, except in children, thorough drainage. The cure of tuberculous empyema by aspiration would seem to throw some light upon the mooted and unexplainable fact that cases of tubercular peritonitis that have been cured have been ascribed to the introduction of light and air to the peritoneum. The theory is that it is a desiccating process, withdrawing the fluid, and a cure is effected. Undoubtedly, there are cases of tubercular pleuritis that are apparently cured for a number of years by simple aspiration; but in adults this treatment is not as satisfactory as that by drainage.

Dr. Frank T. Andrews, of Chicago (by invitation).—I would like to ask the author of the paper whether he can give me any information regarding spontaneous rupture into the stomach or bowels as in a case I had. I am personally very much interested in the subject, because the case I am going to mention was that of my own child, in which there was spontaneous rupture after the introduction of a drainage-tube into the chest. During very severe winter weather, when the thermometer was 20° below, I was caught in a blizzard and thoroughly chilled. The next day I had a severe cough, and much pain in the trunk and limbs, with temperature 103°. I went to bed, and remained there three days, calling my trouble la grippe. Immediately after this my wife came down, and in about three days my baby was taken sick, and in the case of the child there were symptoms of pneumonia within twenty-four hours. My friend, Dr. Lester E. Frankenthal, was in charge of the case, so the patient received the best possible medical care. As resolution progressed in one lung the disease invaded the other, and in addition there were evidences of pleurisy. The moment we discovered the effusion we kept a more careful watch of the child for fear of suppuration, and inside of twelve hours there was pus formation. We immediately inserted a drainage-tube into the chest, let out a little pus, and supposed that the rest would flow slowly into the dressings, which were large. Everything was done under antiseptic precautions.

Dr. Goggans.—How long was it after you discovered pleuritic effusion before you inserted a drainage-tube?

Dr. Andrews.—The pleuritic effusion began during the fourth day after the beginning of the pleurisy. The incision was made about twelve hours after we first discovered the existence of a serous effusion. Evidences of the formation of pus and elevation of temperature having presented themselves, we decided to drain the cavity immediately, and no time was lost in doing so. The point of the whole matter, however, is now coming. The child lay in bed, and some of the pus drained into the dressings through the drainage-tube. The next morning, with the assistance of my brother, Dr. E. Wyllys Andrews, we placed the child upon a table at the window and removed the dressings. We saw that there was some pus in the dressings. The child coughed, and the drainage-tube showed a tendency to come out. The child coughed again, and a little plug of fibrinous exudate belonging to the serous material or sero-pus that was in the cavity came through. There did not seem to be free drainage, and we removed the drainage-tube. The child coughed again, and after repeated coughing some clots came through, but it was evident that there was not free drainage; and now a wonderful thing happened. The child's abdomen began to swell; inside of half a minute the skin on the abdomen was tense and shiny, showing great pressure from within, leading us to suppose that the abscess cavity had ruptured into the peritoneal cavity. This sudden distention was so great as to stop the respiration and heart's action by pressure on the diaphragm. Fortunately, my instruments were sterilized, and we had an oxygen tank in the room which we had used during the progress of the pneumonia. I stepped to the bichloride basin, rinsed my fingers rapidly, picked up a knife, and asked my brother to open the abdomen, which he did. The child's respiration was entirely suspended, and I could get no pulse at the wrist. After opening the abdomen nothing but inflated intestine presented. There was no sign of air, gas, pus, nor anything else in the peritoneal cavity. I asked my brother if he would open the colon, which was enormously distended. He did so, and very soon the abdomen was flat, there being no pus, nothing but odorless air escaping. A sponge was applied to the wound, and by means of artificial respiration and oxygen the respiration and circulation were re-established. Finally, as no more air came through, I sterilized some silk, sewed up the small incision in the colon, the transverse colon was stitched to the

abdominal wound, and closed, and there was no more distention of the abdomen. Twenty minutes after the operation the child vomited pus. He did not cough it up. There was no effort on its part to cough during the whole procedure, except when we were manipulating the wound in the chest-wall. When the child vomited there came out a half teacupful of pure, thick pus. It was perfectly evident to me, with such a history, that in some way the empyemic abscess had ruptured into the alimentary canal. It did not go through the peritoneal cavity, because the length of time from the beginning of the pus formation to the time of the rupture was too short to permit of any adhesive inflammation taking place between the bowel or stomach and the diaphragm. The child recovered, and has not had a bad symptom from that day to this. The child was ten months old. He was put upon an inclined plane, with head down and heels up. The child evidently emptied the abscess in a way that we did not anticipate.

In reviewing the case I can formulate but one theory that will explain all the phenomena and circumstances.

These were as follows: An infant, aged ten and a half months, suffering from empyema, with a rubber drainage-tube a third of an inch in diameter in the chest-wall. The sero-pus was full of fibrinous clots, one of which acted as a valve at the inner end of the tube.

Air was inspired through the tube, but the clot prevented expiration. The greatly distended pleural cavity ruptured into the stomach. The whole alimentary canal was suddenly pumped full of air. The distention was so great that respiration and the heart's action were stopped by pressure on the diaphragm. Instant laparotomy and puncture of the colon relieved the distention and saved the life. The pus came through into the stomach with the air, so the clot did not remain to act as a valve at the end of the drainage-tube, hence no more air was pumped through into the stomach.

The vomiting of pus a few minutes later also proved that the pleural contents had found a route to the stomach. I think the route must have been by way of the submucous coat of the œsophagus. This would be the only direct route to the stomach except through the peritoneal cavity. The shortness of time that the pleurisy existed would dispose of the contention that the

stomach adhered to the diaphragm and rupture occurred through the adhesions. The rupture was not into the bronchial tubes, with subsequent swallowing of pus, for this would not account for the enormous distention of the stomach and bowels with air in a few seconds of time.

This element of time also prohibits the idea of gas formation by fermentation, and, too, the escaping air was without odor.

Bacteriologic examination of the pus from the original wound showed the diplococcus of Friedlander. This was a case of empyema resulting from pneumonia.

Dr. T. F. Prewitt, of St. Louis, Mo. (by invitation).—I have had considerable experience in the treatment of empyema, and I regard an empyemic abscess much as I do all other abscesses—namely, it requires drainage independent of whether it is tuberculous or from some other cause. Drainage is of paramount importance. I will say here, that I think the mortality which formerly resulted from these cases when the chest was opened was due to failure to effect thorough drainage. It is known that years ago, when surgeons or physicians aspirated these abscesses and made openings, the mortality was very great. Since we have learned better methods of treating the cases and establishing thorough drainage, the mortality is slight, in my experience. Such patients very rarely die if thorough drainage is effected. It is true, as Dr. Cartledge has pointed out, that a great many children get well from simple aspiration. I have had a number of cases recover from aspiration alone. This is due largely to the less malignant germs which produce the trouble or conditions; whereas in adults aspiration, as a rule, is not sufficient. I therefore invariably resort to the resection of one or more ribs, according to the circumstances, not only in one place, but in two. I make an opening, resect a rib forward, and make a counter-opening toward the back, pass a good-sized tube through, and drainage is perfect. As a rule, cases thus treated get well. I rarely have seen a fatal case from this procedure. I recall the case of a child in Illinois that I was called to see, which terminated fatally in twenty-four hours; but the child was septic before I saw it. A prominent physician declared there was no pus in the chest. I found two pockets of pus which I opened and drained, but the child died from general sepsis. Operation did no good. That is one of the fatal cases I

have encountered. I could put my hands upon half a dozen patients who have recovered from this method of treatment. I look upon thorough drainage as one of the most essential features in the treatment of empyema. An objection to simply opening the chest is, that as soon as distention is gone from the presence of accumulated pus, the ribs begin to contract, pinch the tube if one has been inserted, and drainage is interfered with. I suspect this was the trouble with the case of Dr. Andrews. Drainage was not sufficient. The abscess never would have ruptured into the stomach or elsewhere had there been free drainage, and the child barely escaped with its life on account of this.

What is the difference between opening the chest and resecting a rib? It is very trifling. It is an easy matter to resect a rib, and you do no more than cut a hole in it. You make an opening between the ribs; what is the difference if you resect a rib, so far as the gravity of the operation is concerned? It is absolutely nothing. Whereas, by doing this you establish drainage which you cannot effect in any other way. I have seen cases where drainage-tubes have been introduced in such a way that drainage could not take place on account of the extent of the obstruction. A rib should have been resected at the outset in such cases, and it is my experience that we do not add one iota to the gravity of the operation. Again, we have that condition of things which Dr. Andrews referred to, where there is a large clot of fibrinous material that we cannot get out through the opening made between the ribs, and in some cases I have dragged it out in great chunks from the chest cavity.

As to the repeated evacuation of pus, possibly there is something in that. I think it is well, perhaps, as suggested by some, to make a preliminary aspiration, but I must confess that I never do it. I rarely do a preliminary aspiration, and when I do it, it is done for the sake of convincing the patient of the necessity of operation. If you resort to aspiration and attempt to draw all fluid off by it, there is more or less adhesion of the lung, and when you have drawn off the fluid without compensating expansion of the lung, you will have pain and suffering on the part of the patient; whereas, if you admit air by a free opening, the air comes in, the pressure is equalized, and trouble is not likely to occur. I would advise in these cases that the fluid at first be allowed to run out rather moderately; but I do not hesitate to

make a free opening and evacuate the fluid at the outset, until, for instance, the heart has adjusted itself. The heart is frequently pushed over to one side, and a sudden evacuation of the pus that permits readjustment of the heart and diaphragm may lead to serious consequences. There should be moderate or slow evacuation at the outset, but these large masses of fibrinous material should be gotten out, and some one has suggested that the whole surface be curetted. I am not sure but what it is a good thing to use the curette here the same as we would in any other unhealthy or tuberculous cavity.

I believe with Dr. Cartledge, that a large percentage of the cases are tuberculous in origin; but this does not prove that they do not get well. I am convinced that the proper treatment of these cases consists in thoroughly opening the chest and evacuating the pus. This treatment cannot be followed by any obstruction to drainage subsequently, and they sometimes close in spite of resection of the ribs, the opening becoming contracted until drainage is interfered with.

Dr. Goggans (closing the discussion).—Dr. Cartledge mentions the probability of most of the cases of empyema being tuberculous. I want to say that quite a number of my cases occurred during an epidemic of influenza, and consequently I did not come to such a conclusion as he did. I have no doubt that these cases can come about as the result of pneumonia, which follows any other specific infection. I am glad he mentioned the idea of opening the chest in cases of tuberculous pleuritis, and compared the results with those obtained in tubercular peritonitis. I have had some experience with this (drainage for the relief of tubercular peritonitis), but I have never known the *modus operandi*—that is, why drainage cured these cases as far as the results were concerned, why it was that such patients recovered.

Dr. Andrews relates a case which I think I can explain, at least to my own satisfaction. His child developed pneumonia, and that part of the lung which failed to undergo resolution went on to purulent infiltration. The abscess did not rupture into the pleural cavity, but there was a pleuritis that had some tendency for the fluid to degenerate and form pus. I understood him to say, however, there was no pus. That frequently takes place. The fluid exuded from the pleural surfaces is fre-

quently serous, and changed into pus, as it did in his case, and he operated on the child too early. He did not reach the abscess at all. The abscess was preparing to rupture into a bronchial tube, and it did do so, and his operation was done too early, even before it was certain that the pleural cavity contained pus. There is such a thing as operating too early in these cases, as well as operating too late.

Dr. Prewitt asked the question indirectly as to the difference between rib resection and simple incision between the ribs. In children I have never had any difficulty in getting perfect drainage by making a simple incision. Beside, the operation of rib resection is attended with more shock and greater danger than the simple incision between the ribs, followed by the introduction of a rubber drainage-tube, and tends to contraction of the chest-walls and greater deformity. We want simply expansion of the lungs, and incision between the ribs has given excellent results in my cases.

IMPROVED TECHNIQUE IN OPERATION FOR INTRALIGAMENTOUS CYST; PRESENTATION OF SPECIMEN.

By Rufus B. Hall, M.D.,
Cincinnati, O.

Intraligamentous or sessile cysts of the ovary have always been of greatest interest to the abdominal surgeon. Before Miner, in 1876, described this method of dealing with them by enucleation, the operation was one of the gravest in abdominal surgery. If the case were not abandoned as inoperable, the cyst was laid open and stitched to the abdominal wall. This was followed by a long period of sepsis, with but few recoveries. Miner's method was a great advance in abdominal surgery. He opened the capsule where there were the fewest bloodvessels. He stripped it far up over the tumor to a point where the vessels were small, to prevent loss of blood before he commenced enucleation in the pelvis. He then enucleated from the crest toward the uterus as much as possible, leaving the attachment to the uterus to be tied as a pedicle. After enucleation, he brought the capsule together, bringing it out through the wound and tying off the superfluous portion of it.

The technique was improved later by dividing the capsule at the point where it would reach the abdominal parietes, and enucleating from without inward. This was found to work very well in some cases, those where the adhesions were not very firm. In the greater number it is impossible to commence at the outer border and enucleate to the uterus. The surgeon proceeds little by little. He has to tie or clamp many

bleeding vessels. Enuclcation is carried on from side to side, from in front and from behind, tying and clamping until nothing is left but the uterine attachment. When the operation is completed, the patient, as a rule, has lost a great quantity of blood, for the main blood-supply, that from the uterus, has not been cut off during all this manipulation. Nor is it possible to cut it off in this method of operating. From personal experience I am convinced that there is a vast difference in cases in the density of the adhesions to the pelvic floor. I have on several occasions enucleated cysts holding from one to two gallons of fluid with a third or a half of the bulk in the folds of the broad ligament, in a few minutes and with but very little loss of blood. On other occasions I have met with similar-sized tumors where the adhesions were so firm it was almost impossible to separate them by dry dissection. These cysts burrow deep into the broad ligament, dipping down into the pelvis in close relation with the ureters, the rectum, and the iliac vessels, and consequently require most careful enucleation. More than one patient has died on the table from loss of blood in this operation. Goodell says: "These are the patients that die on the table." Again, "No cases in surgery demand more coolness, pluck, and judgment on the part of the operator, and none put his resources so much to the test." Any operator can thoroughly appreciate the truth of these statements. He is always relieved when he finishes his operation and has the source of hemorrhage under control. After the cyst was enucleated the peritoneum was stitched together over the raw surface and the pelvis drained, or it was stitched to the abdominal wound and drained. If the patient did not die from hemorrhage, she usually recovered.

The fact that a large percentage of these cysts contain papillomatous growths, makes it incumbent upon the operator to enucleate them entirely and not to leave portions of the cyst-wall behind. Where a portion has been left, there is usually a recurrence followed by death in a few months.

I am strongly inclined to believe that the mortality from operation for intraligamentous cyst is very much higher than

is apparent from the statistics available. There is a disinclination to put on record fatal cases. I know of a number which have never been tabulated. Only a small number of these cases ever come to one operator. If I can trace among my friends who operate, unrecorded fatal cases, the presumption is strong that the mortality is higher than we now believe.

It is well known that a large percentage of the cases that die die from hemorrhage, either on the table or within a few hours after they are put to bed. I am convinced that the technique I propose will convert this into practically a bloodless operation, thereby saving many lives. This is the operation I propose in all cases where the cyst is not loosely attached—that is, where it cannot be easily stripped from the pelvic floor: First tap the cyst and empty it. Ligate the ovarian artery on the tumor side at the pelvic border. Ligate the ovarian artery on the opposite side outside the healthy ovary. Divide the broad ligament. Divide the peritoneum above the top of the bladder on the same side, and push the bladder down. Ligate the uterine artery on the healthy side. Cut across the cervix and clamp or ligate the uterine artery on the tumor side. The blood-supply is then cut off and the patient has not lost a drachm of blood. The capsule of the tumor can now be divided above the top of the bladder and at a suitable point behind. The tumor can now be enucleated from below upward with very much greater ease than from above downward, and with corresponding safety to the ureter, the rectum, and the iliac vessels. Close the peritoneum over the pelvic floor with running sutures of catgut. You can see every part of the field of operation. You separate the adhesions along the line of cleavage, as it were, in place of against it, as in the old method. In the case I shall report it was next to impossible to separate the adhesions from above downward. It took longer to separate the adhesions from above over a space half the size of my hand than it did to enucleate the entire tumor, a space ten times as large, after the blood-supply was cut off. The ureter was laid bare for a distance of four or five inches. It could be seen and was easily pushed aside.

This could not have been accomplished with ease and certainty by the old method.

Mrs. B., aged forty-eight years, mother of two children, youngest aged sixteen years; Jackson, O.; referred by Dr. Holcomb; was admitted to my private hospital September 2, 1897.

I saw the patient in consultation at her home in June, 1897. She had been confined to her bed most of the time for several months, but was able to sit up for a few minutes. She could take liquid nourishment but only very little solid food. She gave a history of having suffered from diarrhœa for six or seven years, with gradual loss of flesh and strength during the past year. She had an abdominal tumor somewhat larger than an adult head which had developed within a year.

I advised immediate operation. They took it under advisement, and I heard nothing more from them until a few days before she entered the hospital. The doctor then wrote me they were ready for the operation, but he thought she was so feeble it was out of the question.

When she entered the hospital she had been unable to take any food for three weeks except a spoonful or two at a time of the blandest liquid nourishment. More than this the stomach would reject. She was unable to sit up. The emaciation was extreme. She had always been a thin woman, never weighing more than 105 pounds, but now her weight would not exceed 75 pounds, and was probably less than that. I have never seen any one dying of tuberculosis who was emaciated to such a degree. She was having from ten to fifteen liquid stools a day, of not more than two or three ounces at a time, with a horribly fetid odor. The abdomen was enlarged to about the size of a full-term pregnancy.

Physical examination gave all the signs of unilocular ovarian cyst, but when the patient was on her back, the abdomen flattened out to a much greater degree than I have ever seen in that condition. The flanks bulged considerably. The change of position did not change the area of dulness.

Vaginal examination revealed the uterus drawn up out of

the pelvis to the right side. Through the thin abdominal wall I could feel the uterine body above the right groin. The cervix could scarcely be touched above the pubic arch. The tumor filled the entire pelvic cavity, displacing the top of the vagina somewhat to the patient's right. This led me to suspect either peritoneal tuberculosis or an intraligamentous cyst. The clinical history of long-continued diarrhœa, great emaciation, and the fact that for several months she had had fever ranging from normal to 101° and occasionally 102°, favored the diagnosis of tubercular cysted dropsy. I had never seen a case of tuberculosis with effusion where the uterus was drawn up out of the pelvis. On the other hand, I had never seen an ovarian cyst where the abdomen and cyst were so flaccid.

She was so ill that for a week after her admission we did not expect her to live from one day to the next. Her mind wandered like a patient suffering from typhoid fever; especially was this true during sleep, when she would talk and pick at the bed clothing. At the end of a week she retained her nourishment better and her mental condition improved.

I told her husband there would be little hope for her with any operation now, and should it prove to be a complicated operation, she would almost certainly die. It was evident that without operative interference there was no hope for her. However, the patient's condition had become so desperate that she and her friends were anxious for anything that offered relief.

The operation was made September 13th, and the specimen here presented removed. After she was on the operating-table I was still in doubt as to the correct diagnosis. The preponderance of evidence was in favor of tubercular peritonitis. I opened the abdomen and found a thin-walled cyst, as you will see, holding nearly two gallons of fluid, with more than one-third of the cyst in the folds of the broad ligament. I started to make the operation in the usual way by tying the ovarian artery on the outside of the tumor and enucleating it. I had not separated a place as large as half my hand when I

was convinced that if I continued in the ordinary way the patient would bleed to death long before I could finish the enucleation. In her enfeebled condition she could not stand even the ordinary loss of blood from such an operation. A previous hasty examination showed the intimate attachment of the cyst to the uterus itself, precluding any possibility of enucleation from that side without greater loss of blood. To make the operation with the least loss of blood and in the shortest possible time was the great consideration in the case if we were to save her, or even to get her off the table alive. Before the operation commenced, she had a pulse of 148 to 160, and temperature from 99° to 101°. I decided to make a hysterectomy, so as to cut off the blood-supply from the tumor before enucleating it. This I did according to the method already outlined in my paper.

For four or five days after the operation it was doubtful whether or not she would survive. She did not fully rally for five days, and was only semi-conscious during this time. Her temperature remained below 98.6° during these days. We sustained her by hypodermic injections of strychnia and digitalin, and gave stimulants and such liquid nourishment as we could get her to take. She had a slow and tedious convalescence. The diarrhœa was hard to control, and the digestion feeble. She gained gradually, and at the end of six weeks from the time of the operation was able to go home, a distance of nearly two hundred miles, thoroughly convalescent and with every prospect of a permanent recovery.

Description of the Photographs.[1] The specimen is somewhat shrivelled. It has been in the preserving fluid two months. I have had two photographs taken with the tumor distended with water. No. 1 represents the anterior aspect of the tumor. No. 2 represents the posterior aspect. On No. 1 you will easily recognize the tumor as the mass at the right.

[1] This paper was published in the January number of The American Gynecological and Obstetrical Journal, to which we are indebted for the cuts illustrating the article.

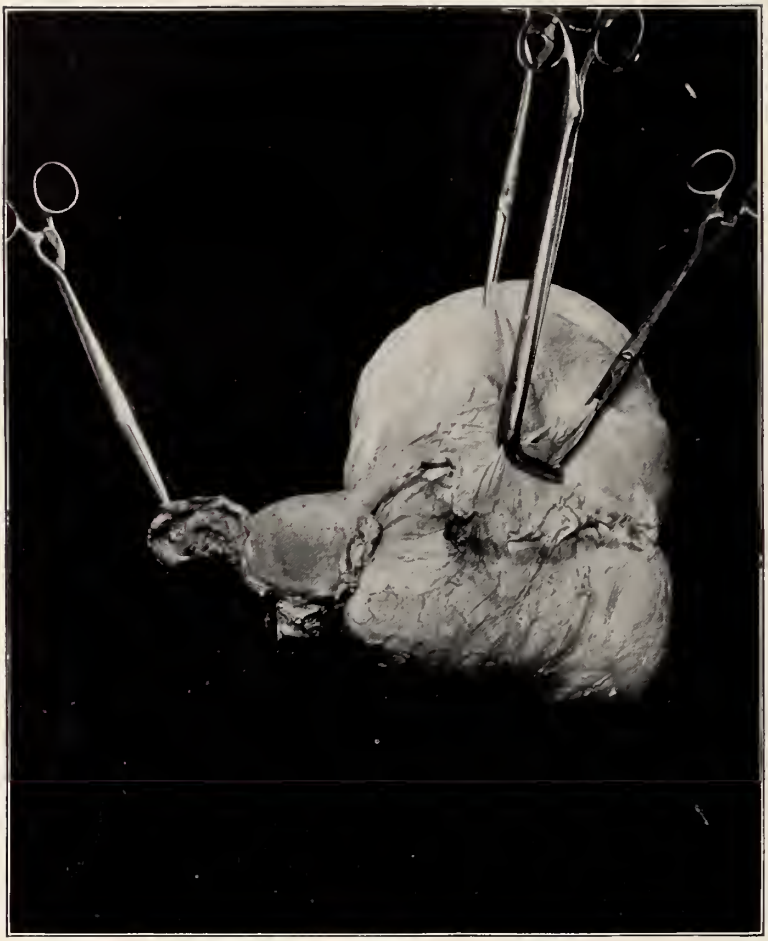
Left of it is the uterus, and projecting from the left side of the uterus are the other ovary and tube. You will observe the trochar mark between the two forceps, which are close together, closing the opening. The dark line running across the photograph just below the points of these forceps shows where we divided the capsule of the tumor and dissected it out of the broad ligament. The continuation of this dark line is shown on No. 2.

DISCUSSION.

Dr. Edwin Ricketts, of Cincinnati.—Mr. President: The procedure resorted to by Dr. Hall in the enucleation of this tumor is new. There is very little to be said in the way of criticism, for the reason that the result in such a desperate case as this has been so good. I recall an abdominal section that came into my hands in November, 1888, in which I had an intraligamentous cyst to deal with, and on opening the abdomen and tapping the cyst I encountered a suppurative condition. In spite of my best efforts, the case terminated fatally in fifty hours. The point of this being papillomatous is worthy of consideration, and for the especial reason of urging early operative interference in these cases, if that interference is to result in simply an exploratory incision. While Dr. Hall has enucleated this specimen in a most magnificent manner, yet I am quite sure it would have been an easy task if he had been able to get hold of the case much earlier in its history. As Goodell said, these are the cases that try the ingenuity of the operator. They are the cases that usually die, and for the procedure that has been given us by Dr. Hall in controlling the hemorrhage during an operation of this kind I am sure that we have a new era ahead of us as to the proper manner of dealing with these cysts. The method is new, and I congratulate the doctor upon his success.

Dr. H. Tuholske, of St. Louis, Mo.—I want to join Dr. Ricketts in his congratulatory remarks on Dr. Hall's paper. Any one who has had a large experience in abdominal work will recall the many trials before him in treating an intraligamentous growth, whether of the ovary or of the uterus, and of the diffi-

Fig. 1.



Anterior Aspect of Tumor.

Fig. 2.

Posterior Aspect of Tumor.

culties that were not successfully met. We need but to recall our tribulations with the operation of removal of the uterus for fibroids; recall the time when supravaginal amputation and the extraperitoneal treatment of the stump were the operations in vogue, and were always done with, or preceded by, the complete ligation of the stump by either the elastic ligature, the écraseur, the serre-nœud, or what not; and it was only when the operative work of Simpson was called to the attention of the profession, that by the ligation of four arteries, the two ovarian and two uterine arteries, we might remove these growths without encountering dangerous hemorrhage, so much so that that principle was applied to fibroid growths, even when the treatment was only supravaginal amputation. The elastic ligature was soon discarded, and the surgeon felt sure that the great risk of hemorrhage was reduced by the application of ligatures to the ovarian and uterine arteries. This principle the doctor has aptly applied to the intraligamentous cyst, and I have no doubt that it will in that instance be at least as successful as it has been in the other. Since the work of Simpson, who did not write much on the subject, there has been a tremendous revolution in our views on the necessary amount of blood lost after operations of that sort. I am not aware that any one before Dr. Hall has applied that principle and that it was thoroughly understood by operative surgeons as being suitable to that particular kind of case. I believe, however, that it is a principle that has been grasped properly and splendidly applied, and will without doubt find many followers who will utilize it in the operation for the removal of intraligamentous cysts. We know that in cutting through the top of the peritoneum that covers the dome, especially the tumor as it bulges out from the pelvis, as soon as we make attempts at enucleation we meet with tremendous hemorrhage, sometimes uncontrollable, and were it not for such a method as has been suggested here, very rarely, to say nothing of the introduction of the Mikulicz gauze pack, could we successfully cope with the hemorrhage. It is only here with the intraperitoneal tampon as a hæmostatic that the operation loses a great deal of its frightful mortality.

I am glad the doctor has taken this matter up and advocated this procedure. With our armamentarium increased by this method, I think we can face operations of this kind with a great deal more ease and comfort than formerly. The doctor is to be

congratulated in bringing before us this method for the treatment of intraligamentous cysts.

Dr. Frank T. Andrews, of Chicago (by invitation).—I have listened to Dr. Hall's paper with much interest, and I congratulate him on the successful result. It is really a triumph in surgery. Intraligamentous cysts are of many kinds. Very few are like this, and I venture to say that Dr. Hall and the rest of you will not find another during the coming year. It is not an operation that you will be called upon to do frequently, yet it is one of the most valuable procedures that could possibly be devised. It would have been practically impossible to save this woman's life by any other method than that adopted by Dr. Hall. The technique of the operation is nearly identical with that of the hysterectomy of Dr. Howard Kelly as described in the *Johns Hopkins Hospital Bulletin* for February and March, 1897. In opening the abdomen in this case I think it would have been possible to incidentally make the diagnosis of intraligamentous cyst, without further exploration, from the appearance of the tumor. From what I know of these cysts, I should say that this tumor has retained practically its normal pink color. An ovarian cyst that is not intraligamentous is pearly white; an ovarian cystoma that is intraligamentous is pink. This is a point of diagnostic importance. Intraligamentous cysts other than ovarian are largely parovarian. If not, they develop from those other ducts, Gärtner's and Pflüger's tubes. These cysts are easy to deal with. They are not usually adenomatous; they are not always neoplasms, but often mere retention cysts. Parovarian cysts, or the other varieties I have mentioned, are unilocular; or, if they are not unilocular, they are double, merely because two tubules happen to enlarge by distention. There is no new growth. It is purely a matter of distention of the parovarian tubule by reason of failure of embryonic resorption that should have taken place. Here is a tumor which is adenomatous and capable of producing carcinoma. This is not likely to happen in any individual case. Still it is an adenoma, and, therefore, capable of that change. By a breaking through the cyst-wall on the part of the epithelial structures, or a breaking through the basement membrane of the mucous lining, we have the beginning of carcinoma, just as truly as we have it in the uterus from polypoid endometritis, or from any other form of adenomatous

degeneration of the mucous membrane of the uterus. I think the diagnosis of intraligamentous ovarian cyst could have been made in this case by the color of the growth. As I have previously remarked, the method pursued by Dr. Hall in this case is one that will not be followed by you very frequently, for the reason that you will not often run across cysts of this size with such close connection with the uterus. The operation of Playfair would be the procedure in every case where it would be possible to do it. In Dr. Hall's case it would have been impossible to do it with the conditions existing in this growth. I am very glad to have seen the specimen and to have heard Dr. Hall's paper. It has been worth the whole trip from Chicago.

Dr. L. H. Laidley, of St. Louis, Mo.—The case reported by Dr. Hall recalls an operation which I performed, and will give in detail, some two or three years ago for an intraligamentous tumor of the largest size, and because of the distended bloodvessels presented in my specimen I concluded to enucleate it. But in addition to that there was a fibroid tumor in the uterus, probably the size of a child's head. I first ligated the lower portion of the tumor, as we usually do the pedicle, and afterward put on the serre-nœud as low down in the neck of the uterus as possible, then securing it by turning on the screw, prepared for the removal of the fibroid tumor. I afterward ligated the utero-ovarian artery near the margin of the pelvis, and after tying the ligature of the pedicle dissected out the portion which was dipping down to the broad ligament, encountering a great amount of hemorrhage, but with the use of the forceps and ligation of a few bloodvessels I was able to control the hemorrhage. The serous membrane was brought over by the ordinary method of treating it, and the patient has now recovered. I personally wish to congratulate Dr. Hall on the presentation of the specimen and the procedure outlined by him, believing that it is a great advance in the proper treatment of these cases.

Dr. T. J. Crofford, of Memphis, Tenn.—I should like to ask Dr. Hall in his closing remarks to state if there is any law or rule relative to peeling out these tumors from above or below. He spoke of turning the tumor a certain way and rolling it out with the grain, following the line of cleavage. I have had some experience with these cysts, and should like to know if every

tumor is a law unto itself, or if there is any rule that can be adopted in peeling out these tumors.

Dr. Hall (closing the discussion).—I feel very grateful to the Fellows who have discussed my paper, and I am glad that I had the courage of my conviction to present the specimen to you. For a time I was inclined not to do so, but one or two of my professional friends thought I ought.

In answer to the remarks of Dr. Crofford, and in reply to one of the other gentlemen who asked a question, I will say that when I commenced the operation I had no intention of putting into execution the principles laid down here. I did not know that I had an intraligamentous cyst, as I said in my paper, and if I had I should expect to meet the indications just as I had done several times before. I have operated on ten or eleven cases preceding this, and always tried to do the best I could. I lost two cases from hemorrhage, not on the table, but they never rallied after the operation. I know what mental torture a surgeon suffers when he loses a patient from hemorrhage. He feels it should not be so. Formerly we operated rapidly, tied and clamped and stopped bleeding. When the patients were put to bed they were not bleeding, but hemorrhage came later, and they bled to death. Transfusion and stimulants could not save them. I do not believe patients will bleed to death by pursuing the method advocated in my paper.

In answer to Dr. Crofford, as to whether there is any rule for peeling out these tumors, I will say that we only apply old principles to this method; the principle we apply in the removal of fibroids is the general rule suggested. I do not know of any rule that we can apply to these cases. I would peel the tumor in the direction it would peel the easiest, and that seems to be from the centre toward the brim.

Dr. Crofford.—The point is to get at the grain or run of these tumors. Is every tumor a law unto itself?

Dr. Hall.—I do not know; this is the first one I have tried to enucleate in this way.

Dr. Crofford.—I do not think you understand my question. The enucleation of this tumor, as I understand it, was not materially different from what it is in other tumors. There is great credit due the doctor for his method of controlling hemorrhage.

Tumors in general of this type will peel better from the uterus out than they will from without toward the uterus.

Dr. Hall.—I can only answer the doctor's question by saying that in my experience fibroids peel better and easier from within out. If you have ligated the healthy side, the side which is the least attached, cut across the cervix, the tumor peels out without any difficulty from within outward. If you take, for instance, a fibroid imbedded in the broad ligament, and ligate the ovarian artery on the outside, it is difficult to enucleate it from the pelvic brim toward the cervix; you cannot find the line of cleavage. I have operated in quite a number of instances in this way, and have applied the rule suggested a few years ago, namely, that in every case get at it from the bottom, as it comes out much easier. (Fearing that his remarks were not clear on this point, Dr. Hall stepped to the blackboard and illustrated his method of enucleating the tumor.)

SOME PERSONAL OBSERVATIONS IN ABDOMINAL SURGERY.

By H. Tuholske, M.D.,
St. Louis, Mo.

With the close of the first half of this century began a period of unprecedented activity in surgical work. The introduction of anæsthetics seemed to remove the last obstacle to surgical possibilities, and the master minds and master hands trained in operative discernment and skill saw, in the means for the abolition of consciousness under the knife, the *ultima thule* of surgical hope. But the marvellous mechanical skill, the acute logic, and vast chemical knowledge possessed by the great leaders in surgery of that period, by men whose names as operators will forever shine on the pages of surgical history, seemed utterly inadequate to get results commensurate with their efforts and abilities, and their appreciation of this fact forms a most pathetic page in the history of our science. It was then that Pirogoff, in his dissertation upon *Fortune in Surgery*, impressed with the powerlessness of his efforts, wrote: "The influence of the physician, the therapeutic resources, and mechanical skill are of no importance; the results of an operation are dependent entirely on chance." "The scourges of surgery"—suppuration, hospital gangrene, erysipelas, tetanus, and pyæmia—travelled in his wake and defeated his best endeavors. In Volkmann's Clinic, in Halle, the mortality of compound fractures amounted to 40 per cent., and so frequent was the occurrence of pyæmia and erysipelas after surgical operations, that he proposed to close the hospital for a time, and made the remarkable statement, that "The surgeon in performing a bloody operation was like the farmer, who, having planted his fields, awaits

the results of the harvest, and reaps it as it may chance to come, powerless to exert any influence over the mighty elements, which may bring him rain, storm, winds, or hail."

The beginning of my surgical experience dates back to that time when it was supposed that suppuration and fever were the necessary accompaniments of a surgical operation; when the appearance of pus was hailed with satisfaction, and the hospitals were hotbeds of pyæmia and erysipelas, and when the cause of the fearful mortality was thought to be due to chemical impurities in the surrounding air. But at last a great light shone upon the earth. Inspired by the researches of Pasteur, the genius of Lister grasped the significance of the fact that everywhere in nature decomposition, fermentation, and putrefaction occurred only in the presence and by the action of living vegetable organisms, and that wounds in the human body formed no exception to that law. The results of his laborious and painstaking experiments revolutionized surgery; and Listerism, or the antiseptic method of the treatment of wounds, opened up an undreamt-of vista of surgical possibilities.

The last twenty years have been marked by the gradual evolution of aseptic from antiseptic surgery, until to-day we feel that the fate of a wound is not a matter controlled by chance, but by the intelligent and careful observance of the details of asepticism almost always.

The fact that my own experience in abdominal surgery is so intimately connected with the many changes which have taken place in modern wound management may form an excuse for having touched upon what might, perhaps, appear foreign to the matter I shall now venture to bring before you.

Most surgeons who began to do abdominal surgery fifteen or twenty years ago earned their first successes and valuable experiences in the performance of the operation of ovariotomy. I performed my first operation in 1881, and in 1890 published a paper on fifty ovariotomies with three deaths.[1] I

[1] Report of Fifty Ovariotomies, with Forty-seven Recoveries and Three Deaths The Weekly Medical Review, January 10, 1890.

have since that time operated on two hundred and eighty cases, with six deaths, and have, therefore, three hundred and thirty cases with nine deaths as the material from which to report my personal experience.

So far as the management of the antiseptic apparatus is concerned, it included the various details in vogue at each particular period. I operated in the beginning under the carbolic spray, using 3 per cent. solution of carbolic acid for disinfection of the hands, and making the toilet of the peritoneum with sponges wrung out of a warm 1 per cent. solution of the acid. Then followed the iodoform period. I was an enthusiastic advocate of the use of this drug, and saw in it the ideal germicide. I rubbed it into the pedicle, ligatures, and parietal margins, and placed about a scruple in Douglas's cul-de-sac. Soon the bichloride of mercury and salicylic-acid solutions usurped its place, and finally all were abandoned for the pure asepticism and the dry gauze wipes or pads. While I have to record one case of carbolic and one of mercury poisoning, both well marked, but, fortunately, not fatal, I cannot say that the death-rate was influenced more by one method than another; but all I found inferior to the present aseptic way. All were irritants, as evinced by considerable pain in the abdomen, frequently requiring morphine, by a great tendency to intestinal distention, paresis, and the consequent danger of the bowel becoming permeable to intestinal pathogenic bacteria. Death was due in one case to the anæsthetic, as related in a previous publication, in one to obstruction of the bowel, in one to the remote effects of ether upon the kidneys, as proved by the clinical history and post-mortem examination, and in one to shock from prolonged operation and great loss of blood. The others I must acknowledge to have been due to peritonitis, not having been successful in finding rarer and less objectionable conditions to blame.

I shall now refer to matters pertaining to points of diagnosis, pathology, and treatment, in the small hope of perhaps being of service in a matter which might almost be called a *res adjudicata.*

Special Difficulties of Diagnosis. Percussion, in ovarian tumors reaching to the umbilicus or above, usually elicits dulness from the pubic symphysis upward and resonance laterally and above. Resonance between the cystic growth and the symphysis, as well as above and laterally, requires differentiation between encysted peritoneal dropsy and ovarian cysts. Careful palpation of the cyst-wall may help out. In multilocular cysts or dermoids, greater resistance or some firm masses may be found; the wall of a parovarian cyst will be thin, like that of the encysted peritoneal dropsy, but differs in rarely having adhesions to the intestinal coils, as is always the case with the latter. This condition must be rare. I have found it present in four cases—three of which were dermoids.

Intimate connection between the uterus and intrapelvic tumors requires differentiation between papillomatous cysts of the broad ligament, fibrocyst of the uterus, subperitoneal fibroids with mucoid degeneration, dermoids, tubal pregnancy, tubo-ovarian cyst, and ovarian hydrocele. In any of these the uterus may be enlarged and displaced.

Papillomatous cysts of the broad ligament, because of their vascularity and intimate vascular connection with the uterus, always produce enlargement of the uterus; they are but slightly movable, being held by the layers of the broad ligament and the number of smaller cysts which are packed closely down in the pelvis and grow around the uterus. The feeling of fixity and bogginess when touched from the vagina is peculiar. They interfere much earlier with micturition and defecation than ovarian cystoma.

Fibrocyst of the uterus is rare unless as a part of general myomatous disease of the uterus. Its characteristic feature would be its absolute connection with the uterus.

Intrapelvic dermoids, unless they contain bone or teeth, cannot be readily diagnosed. They may impose as solid tumors, when thick walled and tense with thick contents; or they may have the boggy feeling of the papillomatous cyst. When the uterus is enlarged in early pregnancy, the resem-

blance to the latter may be striking. I recently removed a dermoid which appeared fixed and had crowded the uterus against the right lateral wall of the pelvis. The uterus was enlarged from a six weeks' pregnancy.

Tubal pregnancy reveals an enlarged uterus displaced forward and laterally, great pelvic tenderness, and the tumor back of the uterus. Menstrual disturbances, pain, the passage of pieces of decidua, and the duration of the disease decide the diagnosis.

Mistakes in diagnosis have been and are still frequent. The conditions are often puzzling, but by careful study a diagnosis of ovarian tumor, in the great majority of cases, can be made. However, a modified diagnosis after the abdomen has been opened is not so rare as some writers would have us believe.

My experience agrees with that of the majority of surgeons as to the frequent occurrence of dermoids. They formed thirty-nine of my series. While usually they did not exceed the size of a man's head, I removed one weighing twenty-eight pounds from a girl twelve years of age and found one filling the abdominal cavity in a woman of fifty.

I have operated three times for malignant growths of the ovary. All were sarcomatous, all double, and all the patients recovered from the operation. Two died within two years after the operation. The third, Mrs. N., of Springfield, Mo., I operated on again after eighteen months for sarcoma of the parietes. She died six months later.

I have no record of a solid non-malignant tumor of the ovary.

I have recorded one case of tubo-ovarian cyst; but a closer study of the case, with the light gained from Mr. Bland Sutton's clear description, made me change the diagnosis to that of ovarian hydrocele.

Ovarian tumor complicating pregnancy is to be treated as if not so complicated. After successful operation the pregnancy will go on to term. It has been invariably so in my experience. I have never regretted having operated under

such conditions, and I recall one case of an otherwise healthy woman, who, having refused to have the operation performed before the termination of pregnancy, died two days after labor, in the care of a clever obstetrician.

An ovarian tumor should be removed as soon as possible after the diagnosis has been made, provided the patient's condition is no contraindication. A possible exception may be made in monocysts in very old women. I remember having tapped an old lady (who died at seventy-nine) twelve times, removing large quantities of fluid each time, but even she might have got along better had the radical operation been performed.

I am impressed that large ovarian tumors are less frequent now than formerly—an evidence of an earlier recognition of the disease and of an entire willingness on the part of surgeons to operate. The operation itself would appear to need no description at my hands. The last word on the subject seems to have been spoken.

The mortality rate after this operation is small. Not much betterment can be expected. Every operator of experience, however, will acknowledge that, while the operation in a great many cases can be performed *cito tuto et jucunde*, in some cases all the skill, judgment, and endurance of the surgeon will be called into full requisition. Complications, detected or detectable only after opening the abdomen, are of sufficiently frequent occurrence to always elevate the operation of ovariotomy to the dignity of a capital operation.

I will now briefly describe our usual mode of preparation of the patient, the operation, and the after-treatment.

The patient, after admission into the hospital, is put to bed and required to remain there three days preceding the operation. In all cases a complete physical examination is made, and the result recorded; the urine is examined to determine the quantity passed in twenty-four hours, the quantity of urea, the presence or absence of albumin, sugar, or casts; a light diet (without solid meats) is ordered, and a laxative (generally a glass of Hunyadi water) is administered. After its

action the patient is given salol or beta-naphtol-bismuth in five-grain doses every four hours for intestinal disinfection.

A plunge bath is given daily, and a douche twice a day; twenty-four hours before the operation the abdomen and genitals are scrubbed and shaved and a green-soap poultice is applied over the abdomen. This is kept on from four to six hours, according to the sensitivenss of the skin. After its removal the parts are scrubbed with warm water, and then with a 1 to 1000 solution of bichloride; then a poultice of absorbent cotton wrung out of a 1 to 2000 solution of bichloride is applied and left on until the patient is placed on the operating-table. This dressing and the patient's gown are then removed by an attendant, who then leaves the patient. A sterilized gown is put on the patient, the abdomen is once more washed with ether, then with bichloride, and finally with sterilized water, and is then dried with sterilized gauze. The patient and table are covered with dry sterilized towels, there being left exposed only the patient's face and a three-inch-wide strip of the abdominal parietes, extending from the symphysis upward.

All instruments have been boiled in a 1 per cent. soda solution, placed in trays, and are covered with sterilized gauze. The dry gauze wipe has taken the place of the sponge, and these, as well as instruments of smaller calibre, are counted before and after the operation, and their number marked down on a card kept for that purpose.

A Mikulicz gauze bag for drainage is at hand.

The hands of the operator, assistants, and attendants are made clean in the following manner: Scrubbing with fibre-brush (which has been sterilized) and soft soap and water for ten minutes (I believe the mechanical cleaning of the fingers and nails to be the most effective), rinsed in hot water, rubbed with alcohol, immersed in a saturated solution of permanganate of potash, decolorized in a saturated solution of oxalic acid, rinsed in sterilized water, and while the patient is getting under the anæsthetic, manicured with cotton wrung out of a 1 to 1000 solution of bichloride. Just before taking up the

knife the hands are dipped in a warm normal salt solution. The incision is then made in the median line, and will vary in length from three and one-half inches, as a minimum, to as many as the size or connections of the tumor may demand. The incision is carried down to the peritoneum, and all bleeding is arrested before the peritoneum is opened. This membrane is then raised into a little cone and incised. The finger is introduced into the cavity, and on it the peritoneum is incised with scissors the length of the skin incision. The tumor is at once isolated from the parietes and viscera by gauze pads. If cystic the trochar is introduced into the cyst, the table, not the patient, is turned, so that the fluid may readily escape; slight traction is kept up by the side of the trochar, and the punctured part of the cyst pulled beyond the parietes. When no more fluid escapes, the hole made by the trochar is closed by forceps, and the table is returned to its position. If adhesions do not prevent, the cyst is pulled entirely out of the cavity, and the pedicle appears as the cyst drops over the parietes. Gauze pads are immediately packed around the pedicle, which is ligated after transfixion in two or three sections (interlinking ligature) according to its width. The tumor is cut off and the pedicle held by ligature or forceps for further inspection. The presenting vessels are separately ligated, and with fine needle and thread a peritoneal cover is made over the stump, leaving no raw surface. The pedicle is then dropped and the sponges removed. If no fluid has escaped into the cavity and no adhesions have left oozing vessels, the cavity is closed, the instruments and sponges having first been counted to make sure that none have been left in the cavity. The peritoneum is first sewed separately with a continuous suture, the muscular and aponeurotic layers next, and finally the skin. The skin is cleansed and dried carefully, a strip of gauze is fastened over the cut with aristol-collodion (exceptionally celluloidin), an ample amount of gauze and cotton put on, and a bandage applied. The patient is put to bed, which has been thoroughly warmed. Reaction is hastened by injecting into the rectum eight or ten ounces of

warm salt solution with one-half ounce of whiskey. Morphine is not given unless the patient suffers severely.

During the first twelve hours the patient gets neither food nor drink except per rectum; after that, during the following twenty-four hours, two ounces of hot water every two hours. Then hot water, thin gruel, broth, and tea in gradually increasing quantities, till after the fifth day. The diet remains fluid four or five days longer, gradually becoming more generous.

The temperature varies from 98° F. after the operation to 100° F. or 101° F. at the end of the second day, and then gradually returns to about 99° F., with a pulse harmonizing with the temperature.

The bowels are moved on the fifth day. The sutures are removed on the tenth or twelfth day, and convalescence is established.

In the foregoing I have given the picture of a clean, uncomplicated case of ovariotomy. Unfortunately, comparatively few cases are of this type, and the variations in the operative procedure and after-treatment are numerous; nor is this type the one which illustrates the risks incurred in the operation.

First, as to emptying of the cyst. In multilocular tumors the consistency of the contained fluid is often such that it will not run through the tube. The cysts must then be opened with a knife and the contents removed with the hand; or the hand may have to be introduced into the growth to break down the walls of secondary cysts; but if the cyst is a dermoid it is always better to enlarge the incision and remove the cyst *in toto*, although in very large and adherent dermoids this procedure will not be available. A small cyst should not be tapped until all adhesions have been severed and until it can be made to present in the parietal opening. Small cysts had better be removed entire, to avoid soiling the pelvis with the escaping contents.

Adhesions. Anterior adhesions are readily dealt with. They are gently separated if they are of recent occurrence;

if in bands they are cut through between ligatures. Adhesions to the intestine or bladder are often difficult to break up. It is better to leave a piece of the cyst-wall attached to the bladder or bowel than to tear the viscus. Deep pelvic adhesions give the most trouble, and bleeding after their separation can often be controlled by the gauze tampon alone.

Pedicles, narrow or broad, are ligated and dropped; twisted pedicles are not infrequent. I think that neither the theory of Tait nor that of Küstner explains satisfactorily the mode of their occurrence. They may be twisted two or three times on their axes, and they should be straightened out before ligation. Sessile cysts require enucleation after splitting the peritoneum. The separation should be begun from the uterine side. If, after enucleation, the cavity is clean and dry, the peritoneal edges can be brought together and dropped, otherwise they should be attached to the parietes at the lower angle of the incision and drained, and very satisfactory results may be gotten. The sewing of the cyst-wall into the parietes is a very different affair. The operation must be considered incomplete, and often, even if healing takes place by granulation, the disease recurs. It is claimed that all cysts can be removed. No doubt, with increasing operative skill and great pluck, the number of incomplete operations will be small. I have, however, failed in six of my cases.

In four of them, after cauterization and drainage of the cyst, a sinus remained for months, which, after the removal piecemeal of the cyst-wall, eventually healed.

The risks of ovariotomy are: shock, injury to viscera, bleeding, peritonitis, parotitis, thrombosis and embolism, tetanus, insanity, and foreign bodies left in the cavity. A certain degree of shock follows most ovariotomies; it is great in broken-down patients or after very prolonged operations or bleeding. The condition is to be met by a hypodermatic injection of one-twentieth of a grain of strychnine before the operation, and the injection into the rectum of from eight to twelve ounces of warm water with one ounce of whiskey immediately after the operation; complete protection of the patient's body from

the loss of body-heat, by heating the operating-table, or by applying hot bottles or hot irons to the patient's extremities under cover, and by subcutaneous injection of a pint or two of normal salt solution. Much depends upon the skill of the operator. To be able to operate rapidly, without haste, to be able to promptly recognize difficulties and be prepared to meet them on well-understood general surgical principles, imply a high order of surgical power.

Injury to the viscera should be immediately repaired by suture of intestine or bladder, or the suturing together of the cut ends of a ureter. Kelly, Bovée, and others have taught us this latter as a substitute for nephrectomy.

In the management of bleeding in the pelvis, a Mikulicz gauze drain tampon is of incalculable benefit. Bleeding above the bottom of the pelvis should be controlled by ligation ; if the bleeding mouths of the vessels cannot be seen for the rapid flow of blood, compression of the abdominal aorta and the sponging out of the blood will aid materially in finding the injured vessels, which should then be ligated. Bleeding coming on ten to twenty-four hours after the operation will be recognized by the usual signs of excessive hemorrhage. It is apt to result from a ligature slipping; but there are other causes.

It occurred in a patient of mine ten hours after the operation. The patient, a young woman, left the operating-table in good condition. Six hours later her pulse was 90 and regular; some hours later, stepping into the patient's room, I found the nurse and assistant doctor alarmed at the sudden change in the patient's condition. The patient was blanched, pulseless, restless, with dilated pupils, and covered with cold sweat. The symptoms of internal hemorrhage were unmistakable. Our preparations for opening the cavity were completed in a few minutes. I found the cavity full of blood. I passed my hand down to the pedicle, expecting to find a loosened ligature ; but I found it in place. I held the pedicle firmly between my fingers while an assistant poured quart after quart of warm water into the cavity, washing out the

clots of blood. At last I found the source of bleeding to be a rent one and one-half inches away from the ligature, in one of the enormously enlarged veins of the broad ligament. A ligature was applied to each side of the rent, the bowels were cleansed of blood-clots and returned, a drain inserted, and the wound closed rapidly by through sutures. The patient's life remained in jeopardy for days, but she eventually recovered. The details of the case, with the cause of the bleeding, impressed me greatly. Quick work alone can save a patient under such circumstances. Subcutaneous injections of a normal salt solution, the gauze tampon, etc., were not known at that time.

Peritonitis may be avoided by perfect asepticism before and during the operation, by the avoidance of contamination of the cavity from septic tumor contents, and of the infliction of traumatism upon the viscera, thereby lessening the likelihood of the occurrence of a paretic condition of the bowel. If contamination of the cavity occurs, thorough cleansing with warm normal salt solution should be attempted, and gauze drains carried from the suspected places.

Traumatism may be lessened by keeping the bowels in the cavity under gauze pads, or if protruded, under warm moist compresses; by having an incision long enough to remove the growth without bruising the viscera and by remembering that too much sponging and cleansing of the peritoneum may destroy the endothelial cells with which it is covered. Peritonitis, nevertheless, may occur from infection with the bacillus coli communis through the distended and paretic bowel. We should, however, acknowledge that peritonitis has carried off patients in whose cases every precaution known to surgery has been observed and every care and skill has been exercised. Honest and experienced surgeons will join me in this statement. It does occur, and the appreciation of its occurrence is evidenced by the many attempts, which we read of in the reports of cases, to give most fanciful and extraordinary explanations of the causes of death after operations.

I desire here to enter a protest against the generally accepted statement that all pus after an operation is due to imperfect cleanliness or dirt during the operation. After every precaution has been taken and the operation has been performed in a thoroughly aseptic manner, there may develop after a few days some irritation around one or more stitches, and this may go on to the production of a drop or two of pus, or even to a well-pronounced stitch-abscess. This may be brought about by a number of different causes. The most frequent and the most difficult to overcome is the staphylococcus epidermidis albus, which penetrates the layers of the skin, and is often impossible to completely remove, even after the application of the green-soap poultice. Among other causes may be mentioned tension from a suture, epidemics of grippe, and finally catgut, which, although found on bacteriological examination to be sterile, may, nevertheless, produce chemical pus, pus without bacteria. Infection of the pedicle or abdominal cavity may come from the uterus. In a certain percentage of cases the streptococcus or staphylococcus may be found in the uterine cavity, and, even after thorough disinfection and curettage, we cannot be sure that none are left in the cornua. After operation these may be stimulated into action and set up inflammation, and from a medico-legal stand-point this is very important.

Parotitis, septic thrombosis, and embolism are simply local manifestations of the septic disease. I have, fortunately, seen no real case of tetanus after ovariotomy. Should an infection by the drumstick bacillus occur, the antitoxin treatment should be resorted to.

Insanity in the form of violent maniacal excitement has occurred in one of my cases treated at the Polyclinic Hospital. The patient had to be restrained mechanically; the attack lasted three days.

Foreign Bodies. In looking over the literature on this subject, we find that all writers lament the fact that sponges, forceps, or clamps have been left in the bellies of patients after laparotomies, which accidents the uninitiated believe to

have been due to great carelessness on the part of the operator. The writer generally adds some trite recommendations as to its avoidance, and with a self-congratulatory wink, intimating that that could not happen to one of his painstaking skill, the subject is dismissed.

There is no question in the world that the accident has occurred with surgeons whose names are synonymes of operative skill, care, and achievement. Another fact is indisputable: that but few cases are reported; but in informally discussing the subject with surgeons, I find these reminiscences and confessions swell the number of accidents considerably. At first glance nothing would seem to indicate greater carelessness. Nevertheless, that is not true; but the accident can happen where no precaution aimed at its prevention is neglected—simply because man is not infallible. Since this is a paper of personal observations, I will give my experience without smoothing over any apparent shortcomings in this direction, with the same candor that I report a death from peritonitis, when it is the cause, instead of heart-failure, or apoplexy, or what not, on the fifth day after operation. For years we have followed in our laparotomies the following plan: The sponges and instruments are counted by the nurse and assistant separately, and their number written on a card, which is hung up in a place fixed for it. After the completion of the operation and before closing the cavity, the order is given: "Count sponges and instruments." When reported correct, the abdomen is closed. I remember a sponge reported missing, and twenty minutes were spent in hunting for it before closing the cavity, when it was found on table, after all. I remember the number being reported correct, and we closed the cavity. An hour later the assistant, a conscientious and painstaking gentleman, said: "Doctor, I have counted the sponges again since the patient has been put to bed, and I miss a sponge; I think I counted them correctly before the operation." I removed three sutures to get two fingers into the cavity, and, after fifteen minutes' hunt, found the gauze pad. Fortunately, there was no evil result. In 1892 a

patient was brought to my hospital in a septic condition from a suppurating ovarian polycyst. The patient's temperature for some weeks had been 102° to 103° F.; pulse 120. She also had daily from ten to fifteen foul thin discharges from her bowels. She was in poor condition for operation, a living skeleton, and the operation had to be done as rapidly as possible. The cyst was large and had many adhesions, in the separation of which considerable bleeding occurred, and a good number of forceps were used. There was pus in the cavity. The cavity was flushed with large quantities of a half per cent. solution of salicylic acid, and a drainage-tube introduced. With the patient *in extremis* we were ready to close the cavity. Sponges and instruments had been counted and recorded as usual before the operation. The head nurse and assistant reported them all there and correct. I closed the cavity, and the patient was put to bed. She made a remarkable recovery; the drainage-tube was removed on the fifth day, and the patient left the hospital five weeks after the operation. Six months later she wrote me a letter saying that she had improved greatly and felt better than ever before. Fifteen months later she wrote that she had given birth to a fine baby, and felt well. Labor had been uncomplicated. Some five or six months after that—more than two years after the operation—the husband called on me and stated that for two or three months his wife had had some rectal trouble, supposed to be piles, and that a week ago under considerable suffering she had passed a forceps at stool. He brought it to me; it was a forceps such as is usually carried as dressing-forceps in a pocket-case, not hæmostatics. I did not claim the ownership. At any rate, if that forceps had been in the pelvis for two and one-half years, during pregnancy and labor, without giving rise to a symptom or modifying labor, it was a remarkable occurrence. Three months after this episode the patient was reported well.

I follow the same routine now, and hope to avoid accidents. As a still greater safeguard, I now have sewed to each gauze wipe a tape twelve inches long, and while the wipe is in the

cavity the tape is left outside with a forceps attached to the end.

Many points come up in the after-treatment, the most troublesome of which are tympanites and inertia of the bowels. The early purgation is an immense advance in our treatment. Occasionally, however, with tympanites and inability to pass flatus, the patient begins to retch and vomit. The rectal-tube, the enemata of salt, glycerin, turpentine, and quinine, and the administration per os of salts are of no avail. After each injection the patient becomes more restless and vomits more frequently. It is well then to stop all stomach feeding and to empty the stomach with the stomach-tube or give large quantities of warm water, which will be readily returned. I have found in a number of cases an injection of six ounces of fresh beef-gall in six ounces of water to apparently travel up the bowel (anti-peristalsis then existing), to disinfect it and stimulate it and to be followed within an hour or two by a copious discharge of flatus and stool, which started the patient on the road to recovery. This failing, opening the cavity, washing and draining it, and subcutaneous injections of pints of normal salt solution are our resorts. These failing, the patient dies. I have no experience with the effect of streptococcus serum injections. Internal medication is of no benefit.

Among the sequelæ to operations, we have occasionally to deal with ventral hernia. Our present better mode of suturing is a great preventive. A patient should stay in bed for at least three weeks after the operation, and wear an abdominal bandage after that. Obstruction of the bowels from adhesion to the stump, to a raw surface, or to the omentum, as well as matting together of the coils of the intestine, is one of the most unfortunate results of the operation. The indications for treatment are plain; the management of individual cases, nevertheless, is unsatisfactory and difficult.

In closing the consideration of ovariotomy, the pioneer operation in abdominal surgery, I desire to ask your indulgence for having devoted so much time to detail. A justifi-

cation for having followed this plan may be found in the fact that, having touched upon matters common to all laparotomies, I am now enabled to treat the following subjects in a concise manner.

The operation of oöphorectomy, or the removal of the uterine appendages, I have performed for the following indications: for disease of the ovaries, for disease of the tubes and the ovaries, to arrest hemorrhage from or growth of fibroid tumors of the uterus, and for nervous phenomena apparently referable to these organs. With the latter I have been as sparing as possible; I have refused to operate on many cases operated on later by other surgeons. The results were not all one could desire, and I believe that the operation will be less frequently performed for this indication in the future. The removal of the appendages for fibroid of the uterus has been in the majority of cases satisfactory; arrest of hemorrhage, the establishment of the menopause, and a demonstrable decrease in the size of the tumor showed the value of this procedure. In a number of cases the benefits were temporary. With our improved methods of hysterectomy, supravaginal or total, we may witness a change of opinion as to the invariable legitimacy of this procedure. The operation for the first indication stands on absolutely legitimate grounds. The question whether to proceed by the abdominal or vaginal route is being earnestly discussed by surgeons the world over. I distinctly prefer the abdominal route, a route travelled so frequently and successfully. I appreciate the reasons for selecting the vaginal route urged by its advocates, the strongest being the necessity of removing a diseased uterus at the same time. I have no doubt of its propriety in selected cases. Perhaps the pure gynecologist will prefer the latter, and the general surgeon the former; habit may play an important part. A complication of appendiceal disease with disease of the tube may not be infrequent: I have met it twice.

In closing the subject of oöphorectomy, I will say that I can report a series of ninety-eight operations without a death.

My experience with ectopic pregnancy is exceedingly lim-

ited. I have only four cases operated upon to report. Intraperitoneal rupture of the tube had occurred in three cases. The first patient was operated upon within two hours after the rupture, and recovered. Two others, in whose cases I was associated with other surgeons, died from shock and loss of blood. In the fourth case rupture was intraligamentous, and the details were as follows: The patient, who had borne six children, after having missed her menstruation twice, was taken with violent abdominal pains, accompanied with collapse. Hypodermic injections of morphine carried her over the attack. She was removed to St. John's Hospital, and after careful preparation was operated upon. The large mass was intraligamentous, with the placenta occupying the upper portion. To reach the fœtus it was necessary to break through the placenta and to remove it and the fœtus rapidly. The bleeding from the placenta was alarming, and was controlled after its removal by a Mikulicz gauze-bag tampon. The margins of the empty sack were gathered together and sewed into the lower angle of the parietal wound. No further hemorrhage occurred, but the patient died twenty-four hours after from shock.

The subject of myoma of the uterus is one of surpassing interest to the abdominal surgeon. Of great frequency, growing from the walls of the uterus, it may present in its cavity, in the cervical canal or vagina, or it may remain interstitial, increasing the size of the organ and deepening its cavity; it may involve one part of the uterine wall, grow enormously, and undergo mucoid or cystic degeneration; or it may present singly or in vast numbers, projecting into the peritoneal cavity; growing in the comparatively young until its size and weight endanger the life of the patient, or decreasing and becoming fairly harmless with advancing age; threatening life by excessive bleeding or pressure on the surrounding organs; sometimes of large size, again utterly without symptoms and unnoticed by the patient; preventing pregnancy in one case and offering mechanical difficulties to delivery of the fruit in another, it presents a combination of so many features as to

enlist the closest observation and study. The literature proves it to have been the subject of most earnest and persistent study, and as a result the mortality of the operation for the removal of myomatous tumors of the uterus has been reduced from 40 per cent. to 10 per cent. and less since 1885.

According to Shauta, myomata, fibromyomata, and fibromata of the uterus are circumscribed hyperplasiæ of the uterine tissue, in which all tissues which form the uterine wall are contained, which, however, are separated from the more or less normal uterine tissue by a layer of loose connective tissue. The tumor itself consists, as indicated above, of the same elements as the uterine wall; but there is a change in the quantitative relation of the single elements, since some tumors consist almost exclusively of smooth muscular fibres, as myomata, others preponderatingly of connective tissue, as fibromata, others again of both these tissues in varying proportions, as fibromyomata. Most varied gradations exist between the three mentioned forms. If we remember beside the widely differing development of the blood and lymph vessels, the softening, the fatty metamorphosis, the myxomatous degeneration, or calcification, which is noticed in myomatous growths, we will readily comprehend that we may find in this group tumors of great hardness, almost bony, and again some which, in their soft fluctuating consistency, rival ovarian cysts. We divide uterine myomata into those which have their origin in the body and those which grow from the cervix uteri; secondly, into intramural or interstitial, subperitoneal, or submucous, according to their relationship to the uterine wall. All myomata are interstitial in their origin; most remain so, for, according to Winckel, 65 per cent. of all are interstitial, 24.3 per cent. subperitoneal, and 10.7 per cent. submucous. This is due not alone to an increase in size, but to the contraction of the uterine tissues and the movement of the growth in the direction of least resistance.

The submucous myomata of the body of the uterus or of the cervix were the earliest known varieties. They present symptoms earlier and more clearly, and are more readily

reached by a well-understood route. While small they are sessile and push the mucous membrane but little ahead of them; when growing they become prominent and pedunculated. The pedicle consists of the mucous membrane and the capsular remains of the tumor. With a long and thin pedicle the tumor will lie free in the cavity of the womb or in the vagina, and is then called fibroid polypus.

Subperitoneal or subserous fibroids originating in the fundus uteri form bud-like elevations upon the uterus when small; but growing they may present prominent tumors, pedunculated, or with broad bases, and of almost grotesque shape. Growing from the posterior wall and becoming pedunculated, they may get down into Douglas's cul-de-sac and impose as hard, movable tumors of the ovary. I have seen one, degenerated into a fibrocyst, fill the hollow of the sacrum and the cul-de-sac, and push the uterus upward and forward. When starting from the lateral wall of the uterus near the attachment of the broad ligament, they may become intraligamentous, fill the side of the pelvis, grow upward and downward, and crowd the uterus against the side of the pelvis and upward.

Intramural fibroids are most frequently multiple. When small they are readily overlooked, but in their further development sometimes increase the size of the uterine body and cavity enormously, and, according to location, bend and distort the uterine body variously. I have seen the uterine cavity expanded fan-shaped and measure the whole length of the uterine sound, from the mouth to either cornu, and a cervix full of intramural tumors the size of a man's arm. The pelvic organs principally feel and resent the presence of fibroids.

Those which grow from the anterior supravaginal portion of the uterus raise the bladder, push forward its posterior wall, and may produce immense dilatation and elongation of that viscus. The ureters may be dislocated downward or outward, or become occluded or compressed; obstruction of the bowel from pressure on the rectum or colon may occur; and the tubes and ovaries may become dislodged and distorted. The

ovaries themselves undergo, as a rule, distinct changes, such as thickening and increase of stroma, cystic degeneration, or other destruction of their follicles.

The fate of the tumors themselves is foreshadowed in the description of their composition and because of their relationship to their surroundings. Hence, after inflammation they may become very dense or necrosed; they may undergo fatty degeneration, or liquefaction, with the formation of cystic cavities; they may calcify or entirely disappear; they may become lymphangiectatic or telangiectatic,[1] but they usually grow during pregnancy.

The first sign of uterine myoma is usually metrorrhagia. Hemorrhage rarely comes from the tumor itself, but may be due to erosion of large veins or sinuses, the result of capsular ulceration. As a rule, however, the bleeding is due to the hypertrophic or degenerative changes of the mucous membrane, which are almost constant. These are especially referable to the part forming the capsule of the growth. At first the excess of bleeding occurs at the menstrual time, then in the intervals until it finally becomes continuous. In the intervals glairy sero-mucous or semi-purulent discharges increase the discomfort of the patient. Great anæmia and a pale, sallow complexion are characteristic of the disease, in connection with which we see fat deposits in the abdominal parietes and fatty degeneration of the heart-muscles. Pain is mostly present at the menstrual period, due to uterine contraction or tension of the capsule surrounding the tumor; great discomfort results from pressure upon the bladder and bowels; very large tumors, pushing the parietes downward and forward, produce œdema of the skin and a condition resembling elephantiasis. I remember a case of an enormous inoperable fibroid brought to me by Dr. Miller, of Macon, Mo., in which gangrene of the parietes allowed the growth to present externally. Quite a percentage of patients are sterile, although patients with uterine myoma may be sterile from other causes. A success-

[1] It is said that they may become sarcomatous, and Mr. Greig Smith has seen one such case in his practice.

ful termination of pregnancy is greatly jeopardized; there may be inability to expel the fruit, or there may be fatal bleeding from incomplete closure of the uterine sinuses. The most important diagnostic signs of a uterine fibroid are the great hardness of the tumor, its intimate or absolute connection with the uterus, and the increase and distortion of the uterine cavity. When softening of the tumor has occurred, differentiation from ovarian cystoma may become difficult, and the presence of an ovarian cystoma may overshadow the signs of subperitoneal and, perhaps, intramural fibroids. During the last year I removed a large ovarian tumor from a patient from Peoria, which entirely obscured a fibroid uterus, which had to be removed at the same time. The vascular bruit so often present in uterine myoma could not be heard in this case.

Submucous fibroids when presenting through the os are readily recognized; when small and sessile, at the fundus, diagnosis may be difficult, and great care will have to be exercised. Rather more than a year ago a lady, very large and with a fleshy abdomen, was referred to me for excessive bleeding from the uterus, with the diagnosis of subinvolution most likely. Preparatory to exploration of the uterine cavity, and with the view of lessening the bleeding, I passed a uterine applicator with cotton saturated with iodine and carbolic acid into the cavity, and turned it easily about several times without detecting anything in it. The uterus had, bimanually, been found not to be much enlarged. The bleeding was not lessened, and uterine contractions with bearing-down pains came on. Dilating the opening os, my finger found a small flat sessile growth at the fundus between the cornua. Thinking that in an attempt at enucleation I might get through the uterus, and her condition precluding a then necessary vaginal hysterectomy, I removed, as a less serious alternative, both ovaries and tubes, and hoped for a permanent or, at least, temporary arrest of the growth. The bleeding stopped and menstruation remained away for eight or nine months. Then there was a return of the hemorrhage, for which another sur-

geon, called in my absence, performed, in her now improved condition, a more radical operation. I recall where, in a similar case, curettage was resorted to for supposed subinvolution, with the result of injuring the tumor, which, becoming necrotic and septic, necessitated removal of the uterus to save the life of the patient.

Pregnancy complicating uterine fibroids may offer considerable difficulty to a correct diagnosis. With a small fibroid pregnancy will most likely be recognized and the tumor overlooked. With a large tumor and pregnancy, the latter is apt not to be recognized. About ten years ago an interesting case illustrating the latter was referred to me by Dr. P. G. Robinson, of this city. The patient had been treated by him for uterine fibroid before marriage and at various intervals for several years after marriage. The patient was considered sterile. When coming again for treatment she had been somewhat irregular, and had missed her menses twice, but had again menstruated for five months as freely as before. There were neither the rational nor physical signs of pregnancy present. Still the interruption of her menstruation for two months inclined the doctor to believe that there had been a pregnancy. Her uterus reached to midway between the umbilicus and the ensiform cartilage centrally, and laterally up to her ribs. The uterus was bossy and irregular, and a large fibrocyst filled the hollow of the sacrum. She was septic, had fever and sweats, and a pulse running to 120. There was either a necrosing submucous fibroid or a dead fœtus. The uterine sound passed its full length, and on withdrawal was free of blood. Dr. G. J. Engelmann examined the patient with me. The uterine neck was hard and thick. Dilatation of the cervix for exploration seemed impossible, and on account of her sepsis I concluded to operate. I removed the uterus, tumors, tubes, and ovaries by supravaginal hysterectomy. On examining the specimen we found multiple fibroids, a fibrocyst coming from the posterior walls of the uterus, an immense fan-shaped uterine cavity, and in one cornu a decomposed three-months' old fœtus. The patient recovered.

The prognosis of small or medium-sized subperitoneal or intramural fibroids growing slowly in a patient near the menopause, may be said to be favorable. It must be remembered, however, that the menopause in these cases may not come until the age of fifty or fifty-five. They are amenable to symptomatic treatment with ergot, hydrastis canadensis, proper regimen, change of air, perhaps electricity, with which, however, in these cases I have no experience, and, above all, by the removal of the ovaries and tubes.

Bleeding submucous or other fibroids, rapidly growing, or large tumors, tumors giving rise to pain and pressure symptoms, or those in which degenerative processes are demonstrable, can be reached only by operation. The operative procedures indicated are: First, for submucous fibroids, according to their position and condition, splitting of the capsules and enucleation of the tumors after dilatation or discission of the uterine cervix, or, if pedunculated, removal with ligature and scissors. Under this head I desire to mention two cases rather out of the ordinary. The first was that of a woman of forty, sent to me from the country to be operated on for abdominal tumor. The tumor reached nearly to the umbilicus, was smooth and globular in outline, was as broad as a uterus at about seven months' pregnancy, and was nearly centrally located. The patient had had a sanguineous, offensive discharge from the vagina for upward of two years. On examination per vaginam, I encountered at once a large, fleshy, soft mass which filled the vagina. To trace it upward I introduced my hand with ease, and passed it up the vagina until my arm to midway between the wrist and elbow became also intravaginal. I still could not feel the end of the growth, even when the assistant pushed down upon it from above. The vagina was wonderfully capacious. Under an anæsthetic and after as much cleansing of the growth and vagina as possible, with the patient in the lithotomy position, I pulled the growth with large volsella through the vulvar opening, and proceeded to remove the growth piecemeal. Getting it lower and using traction, I continued the morcellement of the growth

until something like four pounds of a myxomatous mass had been removed. Still I could not reach the os. I disinfected and tamponed.

Three days later, when the patient had recovered from the effects of the operation, I began the use of hypodermatic injections of ergotin. At the end of three weeks the uterus could be felt just above the pubic symphysis, and the vagina contained as much tumor mass as before. I was now able to remove, by morcellement, the whole growth, which had its origin in the lower right segment of the uterus. The mass removed weighed eight pounds. The patient got well.

The second case was brought to my hospital by Dr. Walton, of Pacific, Mo. The patient, an unmarried woman of thirty, of rather low mentality, but of excellent physique, had been troubled with excessive bleeding and watery discharge from the vagina. Her limbs were enormously swollen and presented the appearance of elephantiasis. Through the small vulvar opening the finger came upon a firm, solid tumor which filled the vagina. Under anæsthesia only two fingers could be introduced, and the limits of the growth could not be reached. Introducing a knife into the vagina, I made a free incision through its lower segment and cut the tissues freely through the left lateral ischio-rectal fossa. I could now introduce my hand, but could not move the growth. It seemed to be firmly held. Taking hold of it with large volsella I moved it from side to side without being able to dislodge it. On raising it upward the air rushed in between it and the vagina, and it became free at once, like a pelvic growth which, sometimes when apparently fixed, can be raised out of the pelvis when the air rushes in between it and the tumor. The tumor was a globular, hard fibroid, with a broad pedicle attached to the cervix. Its complete removal after delivery was not difficult. Its weight was four pounds.

Second. Subperitoneal fibroids, when pedunculated, are treated by excision of the pedicle and suturing of the gap in the uterine tissue and peritoneal closure; when sessile by enucleation and closure of the cavity.

A. Martin's[1] name is prominently connected with the operation of interstitial fibroids. He removes the tumor in a bloodless way, by using the temporary elastic ligature, and expects to permanently control bleeding by sutures. The mortality is so high, however, that I think his method will find few followers.

Third. For most other fibroids or fibrocysts, hysterectomy, supravaginal or total, is to be preferred; for those no larger than a fœtal head, in a uterus without adhesions and a capacious vagina, vaginal total hysterectomy and morcellement; for large tumors interfering with delivery, Porro's rather than Sänger's operation.

The operation of supravaginal hysterectomy presents many unsolved problems. The variety of procedures recommended testify to the earnest work done in this connection, and emphasize the fact that the questions involved have not been definitely settled. It consists essentially in the amputation of the uterus and growth at or about the level of the internal os. More or less of the cervix is left, and upon its care or disposal have turned almost all the various methods proposed. The oldest operation is the supravaginal amputation and extraperitoneal treatment of the stump according to Péan, Hegar, Kaltenback, Kimball, Thomas, and others. After ligation of the broad ligament, an elastic cord or some clamp or constrictor was applied to the cervix, the amputation made, the stump fixed in the lower angle of the wound, sutured to the parietal peritoneum, and the wound closed. Schroeder was the first to sytematically develop the intraperitoneal treatment of the stump. After application of the constrictor, he amputated, cut out a wedge-shaped piece of the cervix, closed the defect with deep and superficial sutures, sewed the peritoneum over it, and dropped the stump. Wölfler and Haecker's intraperitoneal method was a compromise between the extra- and intraperitoneal treatment. Kelly ingeniously suspended the stump from the parietes by two ligatures, left long.

[1] American Text-book on Gynecology.

Zweifel dissected an anterior and posterior peritoneal flap, burned the cervical surface with the thermo-cautery, and closed the cuff over it. Chrobaek made an anterior and posterior cuff, ligated the uterine arteries, burned the cervical canal with the cautery, put in a drain through it into the vagina, and closed the peritoneum as the others had done. Shauta found that the uterine cavity, in quite a percentage of cases, contained streptococci or staphylococci, and to avoid peritoneal contamination did not amputate through the cervix until the parietal peritoneum was closed around the stump. Polk and Senn formed a cuff of the peritoneum; dissecting it off from the tumor or uterus, and ligating the vessels (Noble). The cuff was attached to the parietal peritoneum after removal of the tumor, and the stump, while in the pelvis, was shut off from the peritoneal cavity. Until Stimpson showed that, by ligation of the ovarian and uterine arteries, hemorrhage could be practically controlled, the elastic ligature, serre-nœud, and clamp were considered essentials of the operation. Even now in such standard works as that of Greig Smith this method occupies an all-important position.

Until 1892 the supravaginal operation with the extraperitoneal treatment of the stump was the operation most frequently performed, because of the success of the operation in the hands of Hegar, Kaltenback, Koberle, Keith, Bantock, Tait, Price, and Kelly. It was my favorite method, and I have a series of twenty-three cases so treated without a death. I have seen Schroeder perform many operations by his method; I had two deaths out of eight by following his plan. The introduction of the Trendelenburg position and the work of Stimpson and Baer on the ligation of the ovarian and uterine arteries gave an impetus to the operation of panhysterectomy, and the results of Boedenhauer, Martin, Chroback, Shauta, Küstner, Pryor, Eastman, Polk, Baldy, and others are distinctly encouraging. Intraligamentous fibroids with involvement of the cervix are amenable to treatment by this operation. A greater care in the management of the bleeding and protection of the ureters is important. Between

the intraperitoneal method, according to Schroeder, and total extirpation, retroperitoneal hysterectomy occupies an important position.[1] An important contribution is the report of Dr. Kelly to this Association in 1895 of over two hundred hysterectomies by "Continuous Incision from Left to Right or from Right to Left," and so is the work of Pryor. Noble's paper on the present status of hysterectomy for fibromyomata is instructive and contains in detail the operative methods now in vogue, and we find very clear accounts in Shauta and the *American Text-book of Gynecology*. So far as I can determine from statistics, the mortality after supravaginal amputation is less than that of total removal. The mortality after the extraperitoneal method gives a smaller mortality than either. Nevertheless, it will be less and less frequently employed in the future, and will at last be superseded by total hysterectomy.

DISCUSSION.

Dr. Lewis S. McMurtry, of Louisville, Ky.—Mr. President: Dr. Tuholske's paper is really an embarrassment of riches, and covers such an extensive field as to furnish material for a three-days' discussion by this Association. I think we seldom, nowadays, have such papers as he has favored us with, and I wish to express my personal obligations to the doctor for presenting such an admirable review of his work. It is fashionable in medical societies to discuss some subject, and dismiss all details as if they were mere matters of slight interest. For example, it is common to hear very serious and grave cases of abdominal surgery reported, and the statement made "that convalescence was uneventful." My experience is that a large proportion of them are very eventful. I do not mean to say there may not be a uniform aseptic convalescence following operative work, but the peculiarities of individual cases are such that every case in its convalescent stage requires more or less attention. Rare cases are far less impor-

[1] In the modern retroperitoneal operation the elastic ligature is discarded and bleeding is controlled by the ligation of the ovarian and uterine arteries, and in covering the wound in the broad ligaments, together with the stumps proper, with the peritoneum.

tant than valuable lessons taken from the daily work of the surgeon. I wish to indorse what the doctor has said in regard to the occurrence of pus after surgical operations. Such statements as have been quoted by the essayist from various treatises, to the effect that the occurrence of pus in an operative wound should be regarded a serious dereliction on the part of the operator, is, from a theoretical stand-point, true. But if we will take the work of the best surgeons it will be found that such a standard has not yet been attained. It is dangerous to practitioners of surgery to have it go out authoritatively by our leading surgeons that it is a dereliction on the part of the surgeon that these things occur, because from a medico-legal bearing serious trouble may follow. There are few men engaged in regular surgical work who do not have some cases of this kind. It is true they are growing less. I venture to say that Dr. Tuholske has far less suppuration in his work (stitch-hole abscesses and things of that kind) than he did five years ago. This is to be accounted for, in my judgment, by the improvements in our methods of cleansing the hands and the field of operation. These are the weak points in our modern aseptic surgical technique. We have, by steaming and boiling, thoroughly sterilized surgical dressings, instruments, sutures, ligatures, and sponges; but our methods of hand disinfection are as yet imperfect, and, as ordinarily carried out by the surgeon, may afford access of germs to the wound, leading to suppuration. There is a very great difference in the question of personal cleanliness with individuals. Different ideas prevail as to what is surgical cleanliness.

As to foreign bodies left inside, Dr. Tuholske in making his confessions upon this subject has placed himself in most excellent company. Sir Spencer Wells left in the abdomen a pair of hæmostatic forceps. There are few operators who have not left sponges in the abdomen. I have been fortunate in this respect myself. I once put a patient to bed after the removal of a large ovarian cyst, with a flat sponge beneath the incision, and before the patient emerged from the anæsthetic I clipped the stitches and removed it. The woman made an easy recovery. In regard to these accidents, there is one suggestion I would make, that every one who is habitually engaged in operative work should rely more upon himself and less upon his assistants. I believe every operator should undertake to do the operation, if

possible, himself, and not rely upon an assistant. Whenever there are two pairs of hands engaged in the manipulations, the danger is doubled, both as to septic infection and other accidents. No two men can keep the entire field of operation in the mind of each, and if one man will do the operation, and let his assistant simply tie, hold, and catch, but keeping out of the field as much as possible, there will be fewer accidents of this kind. It is the greatest element in the prevention of septic infection, in my judgment. Septic infection is more probable when we have a large array of instruments, when there is complicated apparatus, and when the operator does not exercise that skill in operating which holds the entire operative field in hand. These are a few of the points suggested by the paper that are of very great importance. I know they are familiar to all of the gentlemen present, and I simply wish to emphasize them.

I wish to refer to another feature, and that is the honesty the doctor has displayed in reporting his own work. He has alluded to the common reports that we see in our medical literature of deaths from heart-failure, from intestinal obstruction, ether and chloroform, from rheumatism, and other things, when we know these deaths are almost always due to sepsis. I believe that the time is approaching when the profession will insist on all major operations being done in hospitals. Major surgical work is done in private practice at great expenditure of time and labor to the surgeon. Many surgeons do not agree with me in this, but it is my conviction, after considerable experience, that in major operations in private homes, and in emergency operations, it is the rule that there is suppuration. It is necessary to take all possible precautions to prevent septic infection, and these precautions cannot be carried out except in hospitals.

Dr. Rufus B. Hall, of Cincinnati, Ohio.—I rise to emphasize and indorse the statements made by Dr. McMurtry in reference to the operator doing the operation. It has many advantages: it adds to the chances for recovery; it minimizes the possibility of foreign bodies being left in the peritoneal cavity. But under unfavorable circumstances and surroundings, even where great care is exercised, we might have an accident like the one reported by the essayist. In this connection I want to place on record an unreported case in which I left a sponge inside in operating on a patient for appendicitis. There was a large accumulation of

pus, and I thought it advisable to remove the appendix, because there was a large hole in the head of the colon that ought to be repaired. I thought it would not complicate matters much to remove the appendix. To do this I necessarily would have to break down the adhesions and wall off the abdominal cavity with sponges. I was operating in a hospital where I was unaccustomed to operate, and the nurses were not familiar with the details of the operation as carried out by me. Although a great many abdominal sections are made in this hospital, and they have a corps of excellent nurses, I took it upon myself to be master of ceremonies, using my own instruments, sponges (gauze pads), etc. I had used six gauze pads, most of which were repeatedly washed and used. After closing the rent in the head of the colon and cleansing the field of operation, I asked the nurse for a clean sponge, meaning, of course, a sponge that had been washed and was reasonably clean. The nurse misunderstood me, and got an extra one out of the sterilizer. She did not inform me of the fact that there were then seven sponges to account for. I walled that off with gauze, put in my stitches, and closed the wound. Some three or four hours afterward the nurse told me that there was a sponge missing. I said that it was not possible, as I had used only six sponges and had six when I was through. She then said that when I asked her for a clean sponge she took one out of the sterilizer. It is unnecessary to state that this was a complicated operation. I walled off the general cavity with gauze packing. Finding that there was a sponge missing, I went to the patient and said to him that we were ready to dress the wound for the first time. I suggested to him that he had better take some chloroform. He was, therefore, anæsthetized, the abdomen was reopened, and the sponge found up under the liver. The wound was closed, redressed, the patient put to bed, and he made a nice recovery. He does not know to this day that his abdomen was reopened. If it were not for the honesty of the nurse I would have had a death from the operation. This is the only time I have left a sponge in the abdominal cavity. If the operator does the principal part of the operation, and keeps his assistant as an ornament largely, he will minimize these accidents; but they have occurred in the practice of the best surgeons of the world. There is one point in the paper that I wish to emphasize, and that is with reference to secondary

hemorrhage. It is natural for us to feel that when a patient dies from secondary hemorrhage we have done incomplete work, but there are exceptions to all regulated facts. The case narrated by the essayist reminds me of two similar cases, one of which I have reported. I have learned to recognize that varicose veins in a small percentage of cases of ovarian cyst are a source of great danger. The veins are very large, sometimes as large as one's finger, and when the pedicle is ligated in the ordinary way it is tied tight enough to destroy the lining of the vein. A case that has occurred in my practice had all the symptoms of secondary hemorrhage twenty hours after the operation. I was called by the interne, but my assistant reached the hospital before me, and with the assistance of the interne and nurse he had the abdomen open when I arrived. The secondary hemorrhage was due to the rupture of the dilated vein. The hemorrhage was quickly arrested and the wound closed. The patient died shortly after the abdomen was closed. A vein, as large as my thumb, had ruptured beyond the ligature. The ligature was in place, but there was a rent in the vein through which I could introduce a finger.

A similar case of secondary hemorrhage occurred in a woman fifty-five years of age, a year and a half ago. Here there was a dilated vein. On the second day after the operation she complained of pain similar to that encountered in cases of hematocele. She also had pain in her leg of that side. In dissecting up the peritoneum she had hemorrhage, and I was fortunate enough to save life by opening the abdomen and tying the vein beyond with thick catgut, and just tight enough to prevent hemorrhage.

These are accidents that may befall any of us, and the operator is not wholly to blame.

Dr. W. E. B. Davis, of Birmingham, Ala.—I have enjoyed the excellent paper of Dr. Tuholske. A paper coming from a man of his vast experience is of value, and I think we are all impressed with what he has said about the recovery of cases. They are not so uneventful as we are led to believe when we read the reports of hundreds of cases by some operators. Unquestionably, there is one element in the technique of an operation that will always be doubtful, and that is the cleansing of the hands. We subject everything else to thorough sterilization,

and we are sure that we have accomplished what we desire. But, as has been pointed out by Keith, it is often the willing but unclean hands that cause sepsis in our operative work. It is a good plan to have scrapings preserved from the hands of our assistants, as is followed in some hospitals now, and if pus occurs to have these scrapings examined if we allow the assistants to take any prominent part in the operative work. The assistant does not feel as anxious about the results of the cases as we do, and he is likely to be careless in the preparation of his hands, and careless in the operation beyond what the surgeon would be. For some time in my practice I have had my assistants use sterilized cotton gloves during operations. I do not believe the surgeon can operate, as he should operate, with gloves, but there is nothing that an assistant cannot do with gloves on as well as without them. If we have sterilized gloves we feel safer with the assistants than we otherwise would. I agree with the essayist and other speakers, that the surgeon should give his personal attention to the operative work, and should do as much of it as is consistent. The assistant should only furnish additional hands so far as possible.

Dr. Edwin Ricketts, of Cincinnati, O.—I know that our friend, Dr. Tuholske, is somewhat disappointed, in that he expected a little more criticism on certain points than he has had. If I am not mistaken, he says he has had 387 cases, with nine deaths. I want to ask him this question: Were all the operations done in private houses or in hospitals?

Dr. Tuholske.—I have a record of every one. There were, perhaps, ten or twelve operated upon in the country, two in the city in private houses, and the others in hospitals.

Dr. Ricketts.—I am sorry the doctor has not given us the percentage of deaths in those cases operated on outside. That is the point I am driving at. I wish to be understood as advocating operations in hospitals.

There is one point that has not been touched upon, and that is the responsibility that comes from the administration of anæsthetics in patients operated on in private houses. When you have your patient in a hospital you have this matter under your control, particularly in emergency cases, some of which may result in death following anæsthesia. We had an illustration of the kind a week ago last Sunday in the city of Cincinnati, in

which three physicians administered an anæsthetic to a patient, who proved to be an alcoholic, and the result was death. These three physicians were driven out of the house soon after with a knife and pistol, and had to have police protection. While hospitals are all right for operations, and I am an advocate of hospital work, there are cases that come to us in which we have to go to the country to operate, and take our chances as to results. I will frankly say that the percentage of deaths in the cases I have operated upon has been just as low when operated in the country as when I have operated in my own hospital.

A word or two with reference to catgut as mentioned by one of the speakers. He goes so far as to say that we may have chemical infection as the result of taking care of catgut in preparing for operation. Then he states that he sews the peritoneum together with catgut. If we have chemical sepsis, why add this additional risk in making an uninterrupted suture in sewing the peritoneum together? I wish to say that I am of the opinion of Jacobs, that the old-fashioned way of stitching the abdominal wound, first peritoneum, next muscle and skin, and bringing them together, has never been surpassed. By stitching the peritoneum together, then in turn stitching the muscle and then skin, you add two-thirds more risk than if you make through-and-through stitches.

Such papers as this, brought before such bodies as this, help us all out of many difficultes. He has given us the plain, unvarnished facts. He has given us his deaths, and has told us what he considers to be responsible for those deaths, and I want to thank him for the manner in which he has placed it before us.

In closing, I want to say that we are reaching a point in surgery in which we tend to overdo work rather than underdo it. We have reached a point in our surgical work when we are inclined to take too much time, and I want to call attention to the fact that Dr. Dudley, of Kentucky, the Grosses, of Philadelphia, and the surgeons of other sections of this country, have attained great success by rapidity of operation, thereby lessening shock.

There is one more point I wish to speak of, and that is the Trendelenburg position, and the doctor will pardon me for bringing it up at this time.

I do not think he mentioned it. As an operator of some

experience, I do not find anything better for operations than the old-fashioned table. In the country, many times operations have to be done on an ordinary extension table. Separate it, put two boards lengthwise, and you have as good an operating-table as it is possible to find, although you may expend $150 or $200 on an operating-table.

Dr. T. J. Crofford, of Memphis, Tenn.—There is one point I want to speak of, which is commendatory rather than a criticism of the paper. I was impressed with the paper, the simplicity of technique, and commend it very much. I congratulate the doctor on his returning to the serre-nœud for the treatment of the pedicle in fibroids. I have tried all methods, have studied all methods, and I do not think there is any method that will compare with it for ordinary cases. Of course, we can have no method for all cases; but in the average case for the removal of a fibroid, I do not know of any method equal to that of trimming the pedicle and making it small enough for the extraperitoneal dressings, which the doctor has adopted in his hysterectomies for fibroids.

Dr. Tuholske (closing the discussion).—I want to thank the members for their leniency in listening to my lengthy paper. We are simply meeting on common ground. I brought up the matter of foreign bodies being left in the abdomen after operations, because sooner or later this may happen to any one, and those who have not had a large experience may not be impressed with the fact that an accident of that sort may occur and the surgeon not be considered guilty of gross carelessness. I am glad that point has been brought out. If we had some such experience-meetings we would hear of a great number of cases that have occurred.

In regard to the use of catgut, if we could secure catgut that was entirely unobjectionable it would be an ideal thing, and we have been led to believe that we could get sterile catgut. There is no question in the world but that we can sterilize it and make it sterile so far as bacterial life is concerned, but before it gets into the hands of the sterilizer it has been decomposed and bacterial action has taken place; it is filled with chemical poison, which you cannot remove by any amount of temperature or bacteria-killing means. The chemical poison stays there. We get pus, which is incapable of producing a spreading inflammation, but which may

produce chemical pus, such as we create in laboratories by injecting subcutaneously croton oil or turpentine. This may occur, and we must be aware of it.

So far as sewing of the parietes in stages is concerned, I have for a long time been coming to this procedure, and since I have used it I like it better. When I am in a hurry I go through the different layers all at one time.

So far as the matter of ether is concerned, I wish to say that I have reported a case of death from ether that occurred under very peculiar circumstances in a hospital in which I rarely operated. It was unavoidable. I ordered the administration of it. This patient was not suitable for ether. One of the important points in connection with this matter is the habit of picking up any one to administer anæsthetics. It is a bad practice. In the last ten years I have had only two men to administer anæsthetics for me, and they are employed for that purpose. In the selection of assistants I have been fortunate, and in none of my cases can I attach any blame to my assistants. If there is great sepsis I feel as responsible as they, because I know they have been as painstaking in the matter as I have. I have been singularly fortunate in that direction.

In regard to the remarks of Dr. Crofford about the pedicle, I used to use the extraperitoneal method; but I read the paper rapidly and left out many things for fear that I would fatigue the members of the Association. I left out everything pertaining to the modern method of treatment of the stump. I said in my paper that my experience with other methods was comparatively limited, but in the future, nevertheless, we will get to the total extirpation method. So far as we now know, and so far as the direct mortality is concerned, we get less mortality from the extraperitoneal treatment of the stump than from the intraperitoneal or total extirpation method. So I believe, like in the ovarian pedicle, in the future it will be total extirpation with closure of the peritoneal cavity.

GALLSTONES IN THEIR RELATION TO CANCER OF THE GALL-TRACT.[1]

[ABSTRACT.]

BY CHARLES A. L. REED, M.D.,
Cincinnati, Ohio.

THIS paper is based upon a report of four cases in which distinct gallstone history preceded the history of malignant disease. The diagnosis was confirmed in all of them by exploratory incision and in two of them by autopsy.

CASE I.—Woman, aged fifty-two years. Had hepatic colic during five years preceding, associated with all of the usual gallstone symptoms. During the preceding thirteen months pain in the right hypochondriac region had been constant. Within the preceding six weeks persistent jaundice had developed. Globular tumefaction was felt below the costal margin. Exploratory incision revealed primary carcinoma of the gall-bladder and of the gall-tract, with secondary development in the liver. Diagnosis confirmed by autopsy.

CASE II.—Male, aged sixty years. Had gallstones for twenty years, confirmed by their frequent passage per vias naturales. Patient had undergone rapid emaciation, and during the preceding month pain had become constant. More latterly he became pronouncedly jaundiced. No physical symptoms could be detected. Exploratory incision revealed carcinoma of the gall-bladder and gall-ducts, with secondary nodules in the liver. A calculus was found in the

[1] The author failed to furnish paper.

common duct and disintegrated by needle puncture. Primary recovery, with amelioration of all symptoms, followed by death four months later. No autopsy.

CASE III.—Woman, aged forty-five years. Had had hepatic colic for several years. During the preceding six months she had been profoundly jaundiced. Lost flesh rapidly. Examination of the blood revealed marked cholæmia. There were no physical symptoms in the right hypogastrium. Exploratory incision revealed induration about the head of the gall-bladder and common duct, to both of which the duodenum was firmly attached for a distance of several inches. Calculus could be felt within the common duct just within its orifice. This could not be dislodged by prudent pressure or disintegrated by needle. It was delivered by incision through the duodenum. Patient never rallied, but died within thirty-six hours after the operation. No autopsy.

CASE IV.—Man, aged fifty-two years ; constant drinker. Had severe attacks of hepatic pain during preceding fifteen years. Last attack was persistent, and continued for over six weeks. In addition to the usual symptoms he had a vacillating temperature and sweats. Operation revealed empyema of the gall-bladder, with induration at its ductile end. The gall-bladder was stitched to the abdominal incision and drained. Death a week later. Autopsy revealed carcinoma of the ducts at their juncture. Numerous small calculi were found in the hepatic duct well up in its main trunk and in a number of its twigs. Multiple abscesses were found in the liver substance.

These cases have a suggestive significance and point to an etiological relationship. This is explained by the result of persistent irritation of the foreign bodies upon the mucous surfaces, inducing hypertrophy, cell proliferation, and, in the event of the existence of original tendencies to cancer of ante-natal origin, they induce rapid development of the malignant neoplasm.

DISCUSSION.

Dr. Edwin Ricketts, of Cincinnati.—I believe so important a subject as this should receive prompt consideration. I can recall, not many years ago, when a subject of this kind was tacked on to the tail end of a programme, because it was considered of such minor importance; and now that surgeons are considering the importance of the relationship of gallstones to cancer of the bile-ducts, it is receiving the attention due it. The subject has been so aptly illustrated by the speaker that there is very little to be said. But I want to say that the profession of this country are under obligations to Dr. Davis, the worthy Secretary of this Association, for the original work done by him in experimentations upon healthy bile-ducts. As to the causative relation of gallstones to cancer, some cases recently under my observation are in the line of the theory advanced by Dr. Reed. I know that one swallow does not make a summer; but it is by personal work and reports of the same that we can arrive at conclusions. In many cases in which there has been found cancer of the end of the duct I will say the disease has been found near the duodenal end, and the malignancy which results from the presence of gallstones is of such a nature that in many instances we cannot get at the bottom of it except by making an exploratory incision. It has been stated as a fact that gallstones, when they have made their escape from the gall-bladder, it was always into the alimentary tract. I saw a case recently in which such was not the case as the result of biliary obstruction. Three weeks after the beginning of the same there was a perforating ulcer of the gall-bladder, the contents of the gall-bladder having escaped into the abdominal cavity. Courvoisier found malignancy in seventy of eighty-four cases; while Bradrowski found malignancy in forty cases straight, and in many of these cases we have been taught that the gallstone colic must necessarily have been present; but this is an exploded idea. On the other hand, we almost always find pain, it is said, over the region of the gall-bladder. This is not accepted, for the reason that we can find it referable to the median line well up under the stomach.

As to the earlier recognition of these cases, I think it is well to bear in mind as surgeons that in those cases in which gallstones are an exciting cause, cancer appears in most cases after forty-five years of age, or at the furthest fifty, and it is more serious when a patient consults you and you take into consideration surgical interference. While the gallstones may escape in some cases and relieve the patient, yet when you have a patient forty-five years of age, it is demanded more than ever that an exploratory incision should be resorted to.

Dr. Joseph Eastman, of Indianapolis (by invitation).—I simply rise to speak of a case that came under my observation within the last two weeks, which bears out the report of the essayist. I operated on a woman who had all the symptoms of gallstones. She insisted that she had passed several of them. I found the gall-bladder indurated, no gallstones, but advancing toward malignant disease. The induration and thickening were so great that the gall-ducts were obstructed, and I have no doubt the advancing malignant condition will ultimately destroy the life of the patient. I did not remove a piece or section for microscopical examination. It is quite enough for us practically (until the bacteriologist shall give us some definite type of germ which causes cancer) to believe that cancer here, as in the uterine cervix, is often an outgrowth of prolonged, localized irritation.

Dr. James T. Jelks, of Hot Springs, Ark.—I am thoroughly satisfied that cancerous troubles elsewhere all come from chronic irritation, as Dr. Eastman has just said, as the stomach, the rectum, the vagina, the uterus, etc. So far, bacteriologists have failed to show us any specific organism that may produce cancer, and having it explained so thoroughly by the infection atrium, by the point of least resistance, which occurs from chronic irritation, the conclusions drawn by the essayist are emphatic. While my own experience is not large, I have seen cancer of the liver unmistakably produced by gallstone infection ; hence the deductions of the paper are prudent. We should urge operative interference in all of these cases in order to prevent carcinoma of the liver, just as we urge operations for repair of the lacerated cervix in order to prevent carcinoma or epithelioma of the cervix.

I wish to thank Dr. Reed for his excellent paper and the

statistics he has brought before us. They are quite a revelation to me. I did not know that 90 per cent. of the cases of carcinoma of the liver were preceded by a history of gallstones.

Dr. Rufus B. Hall, of Cincinnati.—I have been very much interested in the paper of Dr. Reed and the discussion following it. I am firmly convinced that the deductions drawn from the paper will be sustained by future work along this line. In my own work I have tabulated nine cases that sustain the deductions of this paper so perfectly and accurately that if time permitted to narrate them, I would gladly put them on record. I will give the history of one or two briefly.

Eight years ago Drs. Reed and Ricketts honored me with their presence at a gall-bladder operation on a patient who had a distinct history of gallstone colic extending over a period of twelve or fourteen years. There was occasional icterus, and then a period of comparative relief for half a year, then another attack of gallstone colic. The last attack occurred four or five months preceding the operation, when she became icteric, and remained in that way until the operation. There was no question about the patient having a distended gall-bladder and enlarged liver. There was, however, some question as to whether or not there was a complication other than impacted gallstones in the common duct. Operation revealed a distended gall-bladder, with four or five stones in it, and cancer of the gall-ducts. Now, there is no question in my mind but what this patient had cancer of very recent date. Perhaps it began during her last illness, and if she had been operated on preceding the last eight months of her illness I believe she would not have had cancer.

One other case: a gentleman living in Texas, but who originally was an Ohio man, had a similar history to the one cited. When he came under my observation he was fifty-five years of age, he had been jaundiced seven or eight months, and was gradually growing worse. He consulted me with a view to having an operation done. I saw him in consultation with a physician at Williamsburg, near Cincinnati. He had a distended gall-bladder. I advised against operation, for the reason that his physical condition contra-indicated it. He died twelve days thereafter. Autopsy showed a number of gallstones in the

gall-bladder, one impacted in the cystic duct, and there was cancer of the gall-ducts and of the liver.

I was very much interested in my early professional work along this line in regard to the causative relation of gallstones and cancer. When the American Association of Obstetricians and Gynecologists met in St. Louis four or five years ago, I advanced that theory on the floor, and was not very cordially received by the members. Prior to that time I ventured the same opinion before the Cincinnati Academy of Medicine, and I am not ashamed to say it was not well received by the majority of the members. There were only two members in the Society who defended my position—Drs. Ricketts and Reed, but others tried to laugh me out of school. There are many physicians who believe there is a causative relation between long-continued gallstones and cancer in and about the gall-ducts; clinical facts are rapidly accumulating which justify our belief.

Dr. A. M. Cartledge, of Louisville, Ky.—I do not deny the practical nature of the deductions which the doctor makes in his paper, but it is much easier to establish a causative relation between cancer and gallstones than between gallstones and cancer. It seems to me to establish such a relationship is a difficult thing to do. When we consider the great frequency of gallstones, and the comparative infrequency of carcinoma of the gall-ducts, I think we are likely in reasoning upon this subject to get the cart before the horse. Where we have a well-established history of gallstones extending over a period of several years, and then an individual develops malignant disease of the ducts or gall-bladder, there would be at least inference that there might have been a relation between previously-existing calculous trouble and subsequent malignant disease, but the mere fact that we find gallstones in nearly 90 per cent. of the carcinoma cases does not prove that they are the causes. It more probably indicates that carcinoma is one cause of gallstones. It is difficult to determine the relation of gallstones to cancer, on account of the great frequency of gallstones. We may have the long-continued existence of malignant disease in this situation unrecognized, or we may have malignant disease of the alimentary canal which has probably existed a long time before it gives rise to symptoms to lead the physician to suppose that it does exist. In many cases we have a history of the pas-

sage of gallstones, while the patient may have had beginning carcinoma for months. While it is easy to establish the fact that carcinomatous processes produce gallstones, it is difficult to prove that gallstones cause carcinomatous disease. I, for one, do not believe that a chronic irritation produces a malignant disease, except as it incidentally occurs at the site of a congenital matrix for the reception of such irritation. I indorse the practical deductions that gallstone cases should be operated upon.

Dr. Louis McLane Tiffany, of Baltimore.—What has just been said by Dr. Cartledge seems to me to be the main point of controversy. The relation between gallstones and carcinoma is not proven, I think, at the present time. That carcinoma is accompanied by gallstones, and that carcinoma frequently exists, is what we all know; but that gallstones produce carcinoma is as yet unproven. The bile-tract is not so very frequently affected by carcinoma; and yet we only have to look at Riedel's statistics to see that one case out of every four has gallstones, and one person out of four does not die from carcinoma of the gall-tract. It is the rarest case in which we find primary carcinoma. The relation between irritation and carcinoma, especially at the outlet of the body, seems more or less plain; but it is not always so clear within the alimentary tract, and it is not yet well established. But, apart from this, the etiology of carcinoma has yet to be written. What is wanted is a recognition of a set of symptoms whereby we will be able to recognize that carcinoma is present. An exploratory operation is resorted to in some of the cases before the individual gives symptoms of gallstones. If he does not get better under other treatment, usually the abdomen is opened, gallstones are found, and not invariably carcinoma. We have yet to record a case of removal of carcinoma from the gall-tract followed by a cure of the patient. It has not been stated in the paper that we have heard that the impaction of the gallstones takes place at the locality where the carcinoma existed. In one case which was reported by Dr. Hall there was obstruction, and yet carcinoma was found in the ducts of the liver and not at the site where the impaction of the gallstones was. I think it can be accepted that we find gallstones and cancer together. It can also be accepted that we should operate in these cases just as

soon as gallstones are recognized. We ought to be able to recognize these cases sooner than we do, and operate earlier than we have heretofore done. But the relation between gallstones as an etiological factor in the presence of carcinoma is scarcely yet assured.

Dr. Thaddeus A. Reamy, of Cincinnati.—I have been interested and instructed by the paper of Dr. Reed, and by the remarks of Dr. Hall. But I fear that these utterances are likely to exaggerate the tendency of the times—that is, to settle questions of etiology and pathology upon clinical evidence exclusively. Because distinguished clinicians have, as we have heard, observed the coexistence of gallstones and cancer are we therefore to accept the dictum that in all such cases cancer was caused by gallstones? We all recognize the relations between irritation and cancer. There can be no question as to that; but, as has been stated by others, we must clearly recognize that there must be anatomical, physiological, and structural functional conditions in the part that is to be affected, and which becomes the seat of malignant disease, laying the foundation for cancer to develop in that particular locality when the irritation is applied. The frequency of cancer of the rectum is in point. The frequency of cancer of the cervix in women leads us to recognize that, either in the function of the cervix, in its structure, or both, there is a predisposition to the disease. The relation between irritation and the predisposition is at least strongly intimated in the clinical fact, so well known to every one, that it is the rarest thing to find a woman who has not had an abortion, or who has not borne children, to have cancer of the cervix. Cancer does occur in the cervices of other subjects. Each of you may have seen one or two cases. However, if any one present, even in a long professional career, has seen many cases in contradiction of the above statement, his experience differs from that of most men. Careful investigation will disclose the fact that abortions are more frequent, both with single and married women, than is generally recognized by the physician. But other portions of the female economy are equally exposed to irritation and trauma. It is clear, therefore, that both structure and function enter into predisposition. These views apply also to the liver. It is, as all know, an organ especially prone to cancer. It is also known to every physician that cancer

of the liver is often quite chronic. The disease progresses slowly. Often the symptoms are fairly well marked for months and in some instances for years before the absolute diagnosis is made. And when death occurs, only a comparatively small proportion of cases show, on post-mortem, gallstones. On the other hand, we encounter a large number of persons suffering with gallstones who do not have cancer. It cannot be denied, however, that cancer of the liver must in some cases stand in the relation of cause to gallstones. But even here the causal relation has its limitations. Gallstones are more prevalent, other things equal, in country than in city population. And in such population gallstones and cancer do not coexist in 8 per cent. of the cases. In a large percentage of the cases of gallstones the patients recover fully without surgical interference, recovery being spontaneous or aided by proper diet, exercise, and medication. I must, until proof is more conclusive, protest against the proposition to promptly cut every subject of gallstones lest cancer develop.

Dr. Reed (closing the discussion).—I wish to thank the Association for the cordial reception of my brief contribution and for the discussion to which it has given rise. Of course, with those who agree with me I can have no controversy. With those who do not, I do not discover a very great difference between us. I certainly must re-emphasize the significance of the very persistent coincidence of cancer in long-standing gallstone cases. My own brief experience, which I laid before you, embraced cases only in which there had been long-standing antecedent gallstone history. That history is, to my mind, most significant. It conforms with the deductions that have been offered by Frerich and others. But as to which was antecedent and which the sequent condition, I guarantee there is ground for speculation. From my paper I do not believe any such inference is justifiable: that a large number of cases of gallstones precede cancer, but that the intercurrent element of persistent irritation, as an effective etiological factor, I believe to be clearly demonstrated by every recognized pathological fact. Dr. Cartledge spoke of cases which might, perhaps, have been carcinoma, which might have been in existence two or three years, and the carcinoma thereby have been the antecedent factor. The general clinical observation is strangely at variance with

the deductions of Frerich. Now, Mr. President, when we recognize the comparative brevity of the history of the malignant element in these cases, and the probably long duration of gall-stones, we are forced to take cognizance of them as a probable antecedent factor. I am perfectly well aware that in the realm of pathology the initial condition of the carcinomatous change is largely problematical. It is largely a field of speculation. We have been taught to think of all these malignant neoplastic changes as being dependent upon some congenital defect, really antenatal defects in the organism. We have been told in certain quarters that we are to recognize some specific element of infection, yet these two postulates in pathology stand as far from verification as any of the various speculations; they have not the solid basis of clinical observation.

A SERIES OF EIGHT AMPUTATIONS AT THE SHOULDER-JOINT WITHOUT MORTALITY.

By Manning Simons, M.D.,
Charleston, S. C.

A series of eight amputations of the arm at the shoulder-joint without mortality, during the past year, induces me to bring this subject to the attention of the Association.

Amputations performed by modern methods have given greatly improved results so far as the mortality of these operations is concerned.

A review of the statistics is especially interesting as showing the improvement to be noted in relation to amputations performed at the shoulder-joint. Much of the improvement in mortality results may be attributed to what is now familiarly known as "aseptic surgery." Indeed, the success of amputations for injury depends more upon the first treatment of the wound than upon the skill of the operating surgeon.

For the same reason the great mortality formerly attendant upon compound fractures has diminished in proportion as this fact is understood and appreciated by the rank and file of physicians under whose observation and attendance these cases come before they reach the hands of the surgeon.

Again, the modern bloodless methods, with which the names of Esmarch and Wyeth are inseparably connected, have done much to reduce the mortality associated with amputations.

The writer on amputations at the shoulder-joint, in a system of surgery published not more than ten years ago, says:

"Amputation at the shoulder-joint is in appearance a most

formidable operation, yet its results are upon the whole successful." The mortality-table presented by this authority gives a death-rate per cent. in this operation varying from 33.3 to 76.9. He compares these figures with those of amputations in different parts of the body, and remarks that it is seen that the death-rate of shoulder-joint amputations, which is less than two in five, is not much greater than that of amputaton of the leg, and very much less than that of amputation of the thigh.

Since this operation was actually put into practice in the early part of the last century it has been performed in a variety of ways: Sédillot enumerates at least twenty, Velpeau thirty, and Lisfranc thirty-six. This variety of methods proposed indicates that this operation, regarded in the light of modern surgery as comparatively simple in execution, taxed the ingenuity of surgeons in its perfection and development.

Most modern authorities seem to have eliminated all of these methods except three, with one or two modifications of these. These seem to have maintained their hold upon the favor of surgeons, viz.: the oval or racquet method of Larrey, the external flap method by transfixion, known by the name of Dupuytren, and the antero-posterior flap method of Lisfranc.

Until Wyeth brought to notice and to practical application his bloodless method, the only safeguards against hemorrhage were compression of the subclavian artery upon the first rib by the finger, or some mechanical means, as a wrapped key, to replace it. The real mainstay was, however, the skilful assistant who followed the knife of the surgeon as he severed the brachial artery with the final sweep.

Even under the most favorable circumstances a large amount of blood was lost in the severed limb. With Wyeth's method and Esmarch's bandage properly carried out in faithful detail, the loss of blood, beyond oozing from divided capillaries in the extensive wound-surface and from small muscular branches after removal of the rubber tubing, is trifling in amount.

In applying this method, experience derived from these cases induces me to call especial attention to one precaution:

"It is essential that both pins emerge one inch internal to the top of the acromion; otherwise when the humerus is disarticulated the tubing tends to slip down, thus drawing the flaps together, when the vessels may retract, severe hemorrhage then occurring, necessitating ligature of the subclavian artery, or a removal of the tube to secure the vessels in the wound, this latter only being possible of execution after severe loss of blood."

The chief vessels—viz.: the brachial, subscapular, and posterior circumflex—should be secured before the tubing is removed, and usually they are easily seen and taken up.

Case I. of this series was an object lesson to me in ligatures, exemplified by the occurrence of secondary hemorrhage from the brachial artery on the fifth day. Doubtless the most fruitful cause of this form of hemorrhage is septic inflammation that prevents the process of healing in the vessels or destroys such as may have occurred.

In this case too early softening of the non-chromicized catgut ligature was the cause of the hemorrhage. The wound, that had healed along the line of incision and coaptation of the flaps, was with some difficulty opened up, and the bleeding vessel was found freed from the ligature by absorption and softening of the latter. According to my usual custom, chromicized catgut is used to ligate vessels in amputation, but on this occasion there was none at hand, and non-chromicized gut was used with the result mentioned.

In one of these cases the amputation was done by Larrey's or the oval method, the others by intero-external flaps by dissection from without inward. The operation is not difficult of performance, but the chief trouble experienced is in the division of the muscles surrounding the joint, subscapular, supra- and infraspinatus, and long head of the biceps.

With Larrey's operation these muscles are reached through a vertical incision and such space as may be obtained by the separation of the tissues on either side from the bone. At

best the cutting of the insertions of the muscles must be made by touch rather than by sight.

Dupuytren's operation by transfixion gives, after raising of the flap, a good view of the muscular attachments to be severed, but it has the disadvantage that there is difficulty in carrying the knife sufficiently far round the prominence of the head of the humerus to get a wide-based, well-rounded external flap which necessarily contains all the deltoid.

The method by dissection from without inward obviates, I believe, these difficulties and objections, and greatly simplifies the operation.

This operation seems to have attracted but little attention, and is either not mentioned at all or is simply alluded to in recent text-books and systems of surgery.

In the *International Encyclopædia of Surgery* it is dismissed as follows in the description of Dupuytren's operation by transfixion:

"A modification, and, I think, an improvement of this method, originally practised by Cline, and first described in this country by Dr. J. A. Smith, of New York, in a letter to Dorsey, consists in cutting a deltoid flap of curved outline from without inward, then disarticulating, and finally completing the operation in the way already described."

In the *System of Surgery*, by Dennis, under the head of modified oval operation, is described a method by which an external flap is made by cutting from without inward, but it lacks in simplicity as compared with the operation performed in several of the cases here reported.

The operation I have found simple and of rapid execution is described by Druitt as a method that "may be employed." In operating by dissection the surgeon may stand facing the patient, and take the arm, leaving the external flap to be raised by an assistant, or he may stand outside either limb and take the flap himself. The latter plan, I think, is the more convenient, and in all my operations by this method I have managed the flap myself and entrusted the arm to an assistant.

The arm being carried inward and forward by an assistant,

the surgeon commences his incision just outside of the coracoid process, carries it down to the insertion of the deltoid, and then making a well-rounded turn ascends to a point above the angle of the posterior axillary fold just below the spine of the scapula, near its root. The skin is everted below and the flap dissected up, consisting at first only of skin and subcutaneous tissue, but taking more and more of the deltoid until at its base it includes the whole thickness of that muscle.

When this flap is raised the capsule of the joint is fully exposed, and the muscles to be divided are easily in reach and plainly to be seen. The arm being now strongly adducted, the capsule is opened by a strong cut upon the head of the bone, the knife is passed between the scapula and humerus and down along the inner side of the latter for a sufficient distance, then directly inward. If the pins and tubing have been properly placed, the assistant need not compress the artery, as formerly advised.

The wound was swabbed with a solution of chloride of zinc. A drainage-tube having been introduced, the wound was closed with silkworm-gut, the line of apposition of the flaps extending from above downward and outward. The wound dressings were, first, sterilized gauze next the wound, then iodoform gauze, then bichloride gauze, cotton, and a snug bandage. The drainage-tube was removed in forty-eight hours; its object, viz., the draining of oozing from the extensive surface, having in each case been fulfilled. Healing occurred without suppuration, except in one case in which the operation was performed for a sloughing sarcoma of large size in the neighborhood of the elbow-joint. According to the notes of this case the suppuration occurred at one point and ceased at the end of four days.

These cases were operated on in the City Hospital and at St. Francis Xavier's Infirmary:

Case I.—T. N., a Syrian, was admitted to City Hospital, December 18, 1895, suffering with a burn that had charred his arm nearly to the shoulder-joint. Amputation performed

at shoulder-joint. Secondary hemorrhage on fifth day. Discharged cured, January 11, 1896.

CASE II.—S. G., black male, aged twenty-nine years, admitted to City Hospital, December 28, 1896, suffering from gunshot-wound of right arm. The weapon used was a double-barrelled shotgun loaded with No. 4 shot. Next day the arm was taken off at the shoulder-joint. The outer flap was perforated by twelve of the shot. Patient made an uneventful recovery. Discharged on February 5, 1897.

CASE III.—J. S., black male, aged fourteen years, admitted to City Hospital, December 30, 1896, suffering from a crushed arm, caused by railroad accident. The arm was amputated the same day. Patient made an uneventful recovery and was discharged February 1, 1897, cured.

CASE IV.—J. W., black male, aged sixteen years, was admitted to City Hospital, October 3, 1896, suffering from a compound fracture of the humerus. Amputation at shoulder-joint was done. Patient made an uneventful recovery and was discharged October 22, 1896.

CASE V.—J. B., black male, aged fifty years, was admitted to City Hospital, January 18, 1897, suffering with a malignant tumor of right arm just below the elbow. It was gangrenous. Amputated January 19, 1897, at the shoulder-joint. Wound suppurated for four days. Patient made a good recovery, and was discharged, cured, March 1, 1897.

CASE VI.—I. G., black male, aged fourteen years, was admitted to City Hospital, March 16, 1897, suffering from a gunshot-wound of the right arm. The weapon was an old musket, loaded with No. 5 shot. The arm was nearly cut from his body. Arm was amputated the same day at shoulder-joint. The patient made an uneventful recovery and was discharged April 7, 1897, cured.

CASE VII.—W. J., black male, aged twenty years, was admitted to City Hospital, suffering from a compound fracture of right arm; amputation was performed at the shoulder-joint. The patient made an uneventful recovery.

CASE VIII.—J. H., colored male, phosphate hand, aged

twenty-eight years, large, well-muscled, entered St. Francis Xavier's Infirmary on January 20, 1897, at 9 P.M. During the afternoon, while riding on a car, he slipped and fell in such a manner that the wheel of a loaded freight car passed over the arm below the shoulder-joint. The arm was almost completely severed and the bone crushed so as to render manipulation impossible except with the aid of the lion forceps. Hemorrhage was at first profuse, but was checked by some of the bystanders, who tied a piece of twine tightly around the arm. Amputation was performed at the shoulder-joint about 10 P.M. of the same day. After the operation the temperature never rose subsequently to the second day, and on the third day the tube was taken out, the wound having healed by first intention; every other stitch was taken out on ninth day, and the remaining ones on the fourteenth day. He was discharged, cured, on the twenty-first day.

EXCISION OF THE TONGUE.

By George Foy, M.D., F.R.C.S.,
Dublin, Ireland.

One of the earliest and most horrible forms of mutilation was that of pulling out or cutting out the tongue. We find in the second book of the Maccabees, Chapter VII., an account of the woman who, with her seven sons, was ordered to eat swine's flesh. She and her sons, being Jews, refused to eat the flesh, and, as a result, their tongues were torn out. This persecution of the Jews by Antiochus IV. took place about one hundred and sixty years before Christ.

In due time Christians adopted the practice. Humeric the Arian had the tongues of many Trinitarians "plucked out," and the Emperor Maximilian had the tongues of twenty Christians of Nicomedia pulled out.

There is nothing gained by recounting other cases. But it is a remarkable fact that in all the reported cases of this mutilation there is no account of any of the victims having died from bleeding, and in every case it is mentioned that the power of speech was restored.

The restoration of the power of speech was naturally looked upon as a miracle by people who considered the tongue as essential to vocalization. The speech of the tongueless had one good effect: it put a stop to the mutilation; the object of the crime was not attained. Other horrible tortures were devised, as may be seen by reference to the sixteen books of Scot's *Discovery of Witchcraft*, and the Rev. Cotton Mather's *Wonders of the Invisible World*, and his *Tryals of the New England Witches*; but pulling out the tongue is not mentioned.

To those who pondered on the story of the past, the mutilation spoke forcibly, and told that the crime practised to gratify the *odium theologicum* might, by the beneficent art of surgery, be converted into a blessing for humanity.

When the excision of the tongue was first undertaken for curative purposes, the bleeding was the principal source of danger; hence we find that all the earlier operations were specially directed to guard against this risk.

Where the vessels were torn and twisted in pulling out the tongue, little bleeding resulted; but in the clean cut of knife or scissors the vessels bleed freely. How great the difference was once graphically brought under my notice when staying in the West of Ireland, in some parts of which there exists the peculiar custom of men kissing men, and occasionally during the act one protrudes his tongue into the mouth of the other. In one of these friendly greetings the tongue was seized by the teeth of the man into whose mouth it had been shoved, and the anterior third of it chewed off. The injured man was brought to me, howling at the top of his voice, his mouth wide open, and the stump of the tongue pushed out to his lips. There was almost no bleeding, nothing more than a slight oozing, which was stopped by the application of a little compound tincture of benzoin.

Two evils followed from the dread of bleeding in the operation, to wit, postponement of the operation so that it came to be performed too late to reasonably hope for success; and, secondly, the operators, men whose skill as surgeons had been oft proven, were biased in favor of bruising and burning methods of procedure, or in some cases were content to strangle the base of the tongue and allow it to slough off.

Mr. Jonathan Hutchinson thus describes his first operation on the tongue, which took place in 1858, when he removed two-thirds of the organ: "Such was my fear of bleeding that I had had constructed two small but powerful screw torsion instruments, by which I was enabled to tighten ligatures which had been passed through one on each side well behind the diseased parts. These were left in the mouth.

Having in this way in the course of forty-eight hours produced a condition of complete gangrene, I then cut away the offensive mass with scissors."

Cancerous masses calling for the removal of the whole tongue held out little hope of recovery, particularly at a time when all the known caustics had been tried before an operation was contemplated. Uniform failure disheartened even the boldest. Mr. Syme, meeting with no success, discontinued the operation. His great surgical ability was made of no effect by the postponement of the case until all the non-operative methods had been tried.

Mr. Syme's last operation was described in the *Medical Times and Gazette* of August 14, 1858, by Mr. Jonathan Hutchinson, and it is well worth retelling. He commenced by dividing the symphysis menti and drawing the parts asunder. He then cut freely away with a straight, blunt pair of scissors, tying the arteries as he went along. The whole tongue was thus removed, and there was but little bleeding. The patient made a good recovery; but the disease returned quickly.

Surgeons throughout the Three Kingdoms were deeply impressed with Syme's decision, and his views became the teaching of the best text-books of the day.

Pirrie, of Aberdeen, *Principles and Practice of Surgery*, 1860, writes: "The tongue is subject to cancer, for which partial and complete removal has been practised. From the partial excision in the practice of others, and in my own, I have seen no ultimate benefit; and after the experience now obtained of complete excision by way of the methods hitherto practised, it appears to me that an operation for that purpose ought no longer to be considered justifiable."

Skey, of St. Bartholomew's Hospital, does not include the operation in the second edition of his *Operative Surgery*. Syme, in the fifth edition of his *Surgery*, writes: "But the results of experience forbid almost any hope of effecting permanent relief by extirpating cancer even of this part (the tip of the tongue)."

Liston, who commenced by using the vulsellum and knife, as recommended by M. Louis, gradually becomes more cautious, and uses double ligatures. These are passed wide of the disease by means of needles fixed in handles, the perforations for the thread being close to their points. Two or more ligatures are introduced, and by these other and stronger ones are drawn through and tied, so as to strangle the whole base.

To avoid such operations the sufferers sought relief from a multitude of nostrums, and we find authors of repute advising lotions of hemlock, henbane, etc. Indeed, it has fallen to my lot to see hemlock prescribed by a physician of high standing as a remedy for cancer. These methods lost valuable time, but they were less injurious than the lunar caustics and other such irritating substances which stimulated the cancerous stage of many ulcers into the cancerous state and stirred cancerous ulcers into increased activity.

During all this time the French surgeons remained hopeful of the ultimate success of the operation, and continued to advocate it. Malgaigne, in his *Operative Surgery*, describes the methods of Louis, Boyer, and Lisfranc and the methods by bruising and burning. He, however, recommends the method of Lisfranc, which is as follows: He commences by transfixing the tongue with a stout needle, carrying a strong double ligature, of which he makes a loop. Holding this the surgeon draws forward the tongue, and with a strong straight scissors he cuts free of the disease; the straight scissors are now changed for a curved pair, with which he cuts the organ free of its attachments.

Boyer's operation is more suited for partial excision. He makes a triangular incision with a pair of straight, blunt-pointed scissors, the apex pointing toward the root of the tongue. Bleeding is controlled by suturing the cut sides together. Ligature was, however, favored by Mayor, Cloquet, Mirault; and Maingault.

It is unnecessary to recount the many modifications of the cutting operation that have been introduced until we come to the well-known method of Whitehead, of Manchester, which

appeared in 1881—a method which, I think, is the best both for surgeon and patient—one which I have no doubt has been often practised by many of my fellow-members of this Association.

But to chloroform more than to any other single factor are we indebted for the more hopeful results of the operation. When, in 1842, Dr. W. Crawford Long, of Georgia, discovered anæsthesia, he conferred a blessing on surgery by robbing it of its terrors and annihilating its pain; but ether is unsuitable for oral operations, particularly those that may call for the use of the actual cautery. Chloroform met the case. Patients who shrank from the pain of the operation gained sufficient courage to submit to the painless method all the more readily when the agent was an agreeable, nay, pleasant, and, when properly used, a safe anæsthetic. The surgeon recognized the great advantage of profound anæsthesia. He could carry out his planned operation without undue hurry, and ligature bleeding vessels as he proceeded with the excision. Bleeding was lessened, and with a little care no blood passed into the air-passages. But the great advantage of chloroformization was that patients had less dread of the operation and came earlier, came without waiting to try the so-called cancer remedies which are found in all countries, civilized and uncivilized. Not the least of the benefits of the anæsthetic is that it allows of a careful examination of the tissues. Under its influence the relaxed healthy tissue is more easily distinguished from the cancerous infiltrated tissue; thus there is less liability to leave some diseased tissue behind. On a chloroformed patient the écraseur may be allowed an hour to work its way slowly through the base of the tongue, as Mr. Jonathan Hutchinson did with such great success. And yet the surgeon must be prepared to face unexpected trouble in cases of cancer of the tongue, and recognize that he cannot always command success, however much he may strive for it.

For some years past it has been my lot to come across a number of cancer cases of the tongue, the patients all being

males, and the disease too far advanced to justify an attempt at excision.

In the spring of 1894, however, a patient came to consult me for an ulcer on the floor of his mouth, close to the right side of the frænum. It was about the size of a sixpenny piece, and had been there for some months, during which time it had been freely rubbed with lunar caustic, etc. On the under surface of the tip of the tongue was a similar ulcer, which the patient said had appeared within a short time. The ulcer of the tongue was growing more rapidly than that on the floor of the mouth ; it grew latterly, and after a time reached the border of the organ. The patient was a healthy man of fifty years of age, with a history of a mild syphilitic attack, for which some twenty years ago he was salivated and afterward got iodide of potassium. The ulcer had no indurated bases, and the glands of the mouth and throat were free from any discernible induration. A very moderate drinker, a moderate smoker (pipe and cigar), and a regular-living, steady man, five feet seven inches high, and of good physique. He seemed a suitable case for operation, and in this opinion I was confirmed by my friend, Mr. E. Stamer O'Grady, a surgeon of immense experience in this class of cases. The patient was at first unwilling to believe other than that it was a syphilitic sore, but he finally consented to operation, being distinctly told that the ulcers were malignant, and that we could not hold out any hope of its not returning after the operation. We were the more emphatic about the probability of its return, because Mr. O'Grady has found that ulcers beginning on the floor of the mouth are of marked malignancy, and almost always return.

The operation was commenced by dissecting off the ulcer from the extra-lingual muscles, and then the anterior four-fifths of the tongue were excised by Whitehead's method, with the slight modification of passing a strong steel skewer through the base of the tongue from left to right when its base had been brought forward to the lips. By this method, which was suggested by Mr. O'Grady, the stump was not allowed

to fall back into the mouth, and the operation became an extra-oral one. Nothing of note occurred during the operation except a severe bleeding, which was controlled by the use of the thermo-cautery. A careful examination by Mr. O'Grady and Dr. Donnelly found nothing calling for further removal. If we had erred it was on the side of taking too much, as the disease did not extend beyond the anterior third of the organ.

The patient made a rapid recovery, the highest temperature being 99° F., and in a week's time he was walking in the hospital grounds; he could swallow fluids, and made an attempt at speech. He returned home and resumed his ordinary employment as a clerk.

Three months afterward he noticed a little swelling in the position of the former ulcer, and again consulted Mr. O'Grady and myself, and we had no difficulty in recognizing the recurrent epithelioma. Our labors had been in vain.

He was recommended to come into the hospital again, and be again operated on, which he declined to do unless we could assure him that the disease would not return. Of course, we were unable to give the desired assurance, and instead of it told him that we feared the disease would recur, do as we might.

Dissatisfied with our pessimistic views, he went to a gentleman who succeeded in persuading him to submit to operation. This time the anterior convex portion of the inferior maxilla was removed, the remainder of the tongue and some portion of the floor of the mouth. The operation was well and skilfully performed, nothing being left that could be said to be in the least infected.

As before, the patient made a good recovery, and, as before, the disease returned with startling rapidity, and in a short time the patient died.

I sometimes think that in this case the operation shortened life; nevertheless, everything promised success. The case seemed suitable for operation. Every precaution was taken, withal it ended in failure; the desired effect was not produced.

Statistics are of little value unless you have the particulars of each case. The figures, no doubt, contain the truth, but we require details to allow of our reading them aright. From such as we have, however, I think the mortality may be said to depend almost wholly on the duration of the disease and the age of the patient.

The carefully kept tables of statistics of his own cases show for Mr. Butlin (*Diseases of the Tongue*) 13 per cent. of successful results. Mr. Barker's one hundred and seventy cases gave seventeen recoveries—a fairly good percentage, one which prevents us from despairing of any good results from operation.

As for the methods of operation, Whitehead's offers many advantages, and is generally preferred, though Mr. Hutchinson obtained better results from the écraseur; he lost but one private case out of the many on whom he operated. As a writer in *Guy's Hospital Reports* (1888) says, there must be something more than the écraseur to be credited with these brilliant successes, for in the hands of others the instrument did not give equally good results.

We may, I think, conclude that, taken in the beginning, any operation will give good results. All we know of epithelioma gives good grounds for the belief that at first it is simply a local disease; the same applies to the precancerous stage of ulcers. It is criminal to wait until the disease becomes malignant, and even more so to hasten it forward to malignancy by caustics or trivial operation.

Unfortunately, the surgeon is usually consulted about an advanced case, and he has now to decide whether the amelioration of suffering is sufficient to justify the risk of operation. Each case must be decided on its own merits; but to operate on aged patients, in whom the disease infiltrates the whole organ and the glands of the throat and neck, is to court defeat and to bring discredit on surgery.

PECULIARITIES OF THE SURGICAL DISEASES AND INJURIES OF THE FACE.

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Guide. It is here assumed that the student of regional surgery is familiar with the general surgical diseases which may affect any part of the body. Therefore, to avoid, as much as possible, useless and often confusing repetitions, we shall confine ourselves to describing only the peculiarities which those diseases present when they affect the face proper or some of its divisions—the nose, lips, chin, cheeks.

In all cases we will successively consider the injuries, malformations, neuroses, softenings, indurations, congestions, inflammations, gangrenes, ulcers, fistulæ, tumors. All the points of the various diseases will be well reviewed systematically and be well considered mentally by the writer, so that if no peculiarity is mentioned it is because none deserves mention.

Diseases of the skin, having such a peculiar importance when affecting the face, will be defined so as to enable the student to form an idea of their nature, but nothing more will be said of them; the febrile eruptions are not considered; surgical clinical classification of these diseases is here followed, rather than the regular methodic one of the dermatologists. Diseases of the forehead and of the maxillary bones will be studied at some future time.

Peculiarities of the Injuries of the Face. Injuries of the face would be still more frequent than they are, on account of the exposed position of the face, but for the small size, excessive mobility of the head, and the protection

afforded by the arm and forearm, instinctively brought up quickly in front of the face.

Burns are usually deeper than they seem at first; they are often followed in the mildest form by at least coarseness of features, deformities, ugly cicatrices, deviations of the lids, nostrils, lips, specially the lower lip, which is drawn toward the chest, the whole face following; the result is dribbling of the saliva; the cicatrices sometimes interfere with the movements of the lower jaw. It is important to prevent the patient from scratching himself during sleep or delirium, so as to prevent a frequent and potent cause of increasing the deformities.

Burns by acids (sulphuric, nitric, vitriol), striking the face accidentally or by a criminal hand, are the most frequent of the kind. In criminal cases it is the face that is aimed at specially. On account of the disfigurements that follow and the loss of the sight, these burns are of the gravest character; no special treatment is here required except greater diligence.

Freezing, or frost-bite, is common about the face, on account of its exposed position; the reaction should be brought about very slowly here, specially so as to limit the damage and have as little cicatrix as possible; when blebs form, it is of bad omen. There often remains after recovery a purple color, for which subcutaneous injections of ergotine have been recommended.

Contusions are specially frequent in children, who have so many falls. They affect specially the prominent parts, orbital ridge, malar bone, chin. They are often followed by great swelling and discoloration, specially about the eyelids (black eye). When the injury is located over a bone there is formation of a hæmatoma; when in a soft region the blood becomes infiltrated. A blow or contusion on the side of the face is a potent one for a "knock down" or a "knock out." Cold applications and pressure are the only reliable means; most of the others are popular errors. Absorption is delayed if the system is in bad condition; pugilists recover quickly

from such injuries, often of the severest form, because their previous training has placed them in the best possible condition. If a liquid hæmatoma forms and lingers, aspirate; do not puncture or incise.

Punctured wounds, when deep, are apt to be followed by subcutaneous hemorrhage; they may penetrate in one of the cavities, where the weapon may be broken, as the maxillary sinus, orbit, cranium.

Incised wounds are usually caused by knives or sabres, or falls through a showcase or on pieces of glass; they usually gape much; very often fatty lobules protrude between the edges of the wound. Sabre wounds sometimes carry away the whole of the projecting parts, like the nose, the ear, the malar region, the chin; they bleed freely. Great care should be taken to approximate the edges properly, so as to avoid cicatrices; fine needles should be used, also fine silk with intradermic sutures; plaster strips or collodion should be placed over them; plaster alone will not approximate with sufficient accuracy. These wounds unite generally by first intention, because the skin, subcutaneous tissues and muscles form but a single matted layer or structure.

Contused and lacerated wounds produced from within without, over the malar region, orbit, border of inferior maxilla, teeth, often present a wound of the deep parts much greater than on the superficial parts, as it is truly the underlying bone that has done the cutting.

Contused wounds produced from without within are the most frequent. Sometimes they are very extensive, such as result from the kick of a horse, terrific falls, etc., and large portions of the facial mask are torn away and hang down. They should not be trimmed at the edges, because nature will eliminate more economically than the surgeon's instruments; every square millimetre of skin or tissue is more valuable here because of the cicatrices and deformities, which are much worse and more dreaded on the face than anywhere else. However, a few sutures can be placed to advantage to support and approximate the parts.

Gunpowder stains should be removed at once and thoroughly; if they are allowed to linger they will remain for life; if necessary, cocaine or an anæsthetic can be used; the parts should be first scrubbed hard with a hard brush; then every grain of powder must be picked one by one, employing a cataract needle; a 1 per cent. of mercuric chloride will facilitate the removal of the grains of powder.

Gunshot-wounds of soft parts alone of the face are very rare. However, there exists a case on record of perforation of both cheeks by a bullet, without injury to the bones or teeth, in an officer who was wounded when uttering an enthusiastic hurrah. Gunshot-wounds from a distance are the rule in war, and may be terrific; in one case the whole face was destroyed except the eyes, and the patient survived, feeding himself through a tube which he introduced in the œsophagus each time he ate (Wyeth). Gunshot-wounds at close range are most commonly due to suicidal attempts. It is most remarkable how much nature will do to repair the injuries. These wounds should be managed like the lacerated wounds; do not remove any piece of tissue nor of bone; let nature do the elimination.

Gunshot-wounds may be complicated by the lodgement of a ball or any other foreign body in any one of the cavities of the face, by the lesion of some organ of special sense, or of the organs of mastication, deglutition, speech, by even the fracture of the base of the skull, by injury to important nerves, to salivary glands, teeth, lachrymal glands. Besides, the softness of the bones allows the missiles to penetrate deeply, and they contract over them, hence greater difficulty in removing them.

Arrow wounds present great bleeding; all the above remarks concerning gunshot-wounds are applicable to them.

The *immediate complications* of the wounds of the face are: emphysema due to fracture of nasal fossæ or maxillary sinuses; wounds of Steno's duct; cerebral concussion—the latter not very frequent nor severe; it is, on the contrary, remarkable how few cerebral symptoms develop after violent

injuries of the face; this is due to the fact that the bones are soft and yield readily; wounding of the deep arteries, internal maxillary, giving rise to hemorrhages through the mouth without being able to ascertain positively whence the blood comes.

The *secondary complications* are: œdema of tongue and pharynx, interfering with deglutition, cephalic tetanus, persistent neuralgia, croup, contractures. Secondary hemorrhages are frequent in lacerated and gunshot-wounds of the face; they usually take place between the fifth and the twenty-fifth days; it is the small, deep vessels that are the troublesome factors. No styptics should be used specially here; it is preferable to use methodic plugging with long, narrow strips that are well packed tightly in small segments in all the nooks and corners with as hard a compression bandage as the patient can stand. The bleeding arteries should be ligated *in situ*, if possible; but this is very difficult, and often unsatisfactory on account of the inflamed and sloughing condition of the tissues. By applying a provisional loop-ligature around the common carotid the hemorrhage may be controlled until a thorough search and a satisfactory ligature of the bleeding points be accomplished *in situ*, when the provisional ligature is removed. In such cases the common carotid should be exposed close to its bifurcation, so that, if the above procedure should fail, the external carotid is within easy reach. It must be well borne in mind that it is the external carotid that must then be ligated, not the common carotid on account of possible cerebral complications. If in extensive or general bleeding it may be necessary to ligate both external carotids, in such an emergency the ligatures should be applied above the origin of the linguals.

The *sequels of wounds of face* are the following: reflex contractions of the muscles of the face (from a wound of the face or scalp), constriction of the jaws, ectropion of the lids or lips, atresia of the mouth. Injuries of the face (contusions and wounds) are sometimes followed by amaurosis, specially if they occur on the orbit or malar bones. The lesion is

often a dislocation of the lens or retina; sometimes there is no detectable lesion.

The *mortality of injuries of the face* is comparatively low because the vessels and the bones are shelly, the parts naturally drain well through the nose and mouth, the vascularity and the nutritive powers are at their best here. During the War of Secession 90 per cent. recovered, some with horrible mutilation.

Fractures of the nose will be treated with the injuries of the nose, and the fractures of the malar bone and zygomatic arch with the injuries of the cheek; fractures of the maxillæ will be considered at some other time.

Poisoned wounds. Stings of insects, of spiders, etc., are common, because of the exposed condition of the face; the swelling spreads rapidly, and is particularly disfiguring. In cases of bites of horses or of dogs there is a flap corresponding to the upper jaw of the animal and one to the lower jaw. Bites of rabid animals are much more rapidly followed by hydrophobia, because the distance to the brain is so much shorter than when the hand or any other part is the site of the injury; also, because the teeth penetrating at once into the tissues, without passing through any clothing, the inoculation is more thorough and more virulent. All poisoned wounds of the face should be treated as in other regions.

Congenital Malformations. *Congenital atrophy* of the face may affect the whole face or one side only. *Absence of face* is called *aprosopia;* more or less marked imperfection of the face is called *ateloprosopia.*

Congenital branchial fistulæ have been observed in the face on the line extending from the auditory meatus to the labial commissures, and also in the groove between the nose and the cheek.

In *unilateral atrophy the skin* is shrunken, yellowish, hardened.

In *sclerema neonatorum* the skin is very hard, tense, cold; the body is lying motionless, as if the face and limbs were fixed in death; the child cannot open its mouth to

suck; the disease occasionally shows only a few days after birth.

Albinism is congenital *absence of pigment* in skin, hair, and eyes.

Congenital hypertrophy of the face may include the whole face or only one side.

Double face has been observed on a living subject.

Œdema neonatorum is very rare in the face; it begins by the lower limbs and ascends.

Icthyosis is increased thickness or scaly appearance of the epidermis; it is, as a rule, congenital, although the disease is seldom noticed until some little time after birth; it very rarely attacks the face.

Xerodermia is the commonest form of ichthyosis, and is often nothing more than a dry, scaly condition of the skin.

The *congenital scrofulous face* presents three types. In the *sanguine type* the face is oval, the skin thin, transparent, the veins often showing through the complexion, oftener dark than fair; the expression is bright, sharp, and animated; the eyes are bright and often dark; the eyelashes long and silky; the nose sharp and long, the alæ contracted; the lips are thin, the teeth are white and often brittle; the lower jaw is small and angular; the hair fine and silky, often dark, not over-abundant. In the *phlegmatic or melancholic type* (scrofula proper) the face is round and plump, the skin is thick, pasty, muddy; the complexion is usually fair; the expression is more or less dull, heavy, apathetic; the eyes are large and full, usually pale; the nose is large, the alæ are thick, the nostrils open and dilated; the lips are thick, specially the upper; the teeth soon decay; the lower jaw is large and broad; the hair generally thick and coarse. In the type called *pretty struma* the coarseness of the features is toned down, the lips are full but not tumid; the face, like the body, is plump but not flabby (Southam). Proper and long continued specific treatment may improve these conditions.

The *congenital syphilitic hypertrophy* of the face, in chil-

dren or in young adults presenting evidence of congenital syphilis, is characterized by prominence of the frontal eminences, imperfect development and depression of the bridge of the nose, opacity of the cornea, pits and scars on the face and forehead, cicatrices and fissures on the cheeks and at the angles of the mouth, malformations of the permanent teeth, specially of the central incisors of the upper jaw (Southam). Long-continued proper specific treatment may also improve that appearance.

Birth-marks, or Port-wine stains, are more frequent on the face than anywhere else; they may be very small or very large; they may be level with the skin or they may be raised. They should be treated here as in other parts, with more care, if possible, on account of the cicatricial marks.

Congenital deviations of the face, or *asymmetries,* in which the face is thrown more to one side, have been observed to a lesser or greater degree.

Acquired Malformations of the Face. We include under this name all diseases which cause deformity of the face or its component parts. We do not include the alterations of color, of heat, of contractility, etc., which are more specially of the domain of medicine.

Atrophy of the hair comprises *alopecia,* which is baldness or loss of hair; *alopecia areata,* which is loss of hair in circumscribed, well-defined areas, with a smooth and shining skin.

Atrophy pilaris propria affects the individual hair-shaft, which becomes segmented, the segments being marked by nodes formed by irregular splitting of the hair-shafts.

Pigment atrophy is called *leucodermia* or *vitiligo.* It is a loss of pigment in small or large areas presenting patches of blanched skin; although the neck is the most common situation for it, the face may also be affected.

Comities is the loss of pigment of the hair-shaft.

Anidrosis is absence of perspiration, or dry face.

Atrophy of the cuticle is usually a senile atrophy.

Atrophy of the whole face or of *a side,* or a part of it, has been observed after losses of substance due to injuries, to

softenings, indurations, neuroses, inflammations, gangrenes, necrosis, ulcerations, fistulæ, tumors removed, operations.

Facial trophoneurosis, or *reflex or paralytic atrophy*, is the name given by Schott and Romberg to a special atrophy affecting the face in preference, where it always remains unilateral; it is due to a lesion of nutrition allied to functional disturbances of the nervous system; the cause is unknown; it is not a sclerosis, but an absorption of all the tissues, specially of the connective; if once established, no treatment will be of any avail.

Hypertrichosis or hypertrichiasis, or *hirsuties* are excessive or abnormal growths of hair, very objectionable in women specially.

Trichorrhexis nodosa is a nodular condition of the hair; the hair of the face is the most frequently affected.

Tinea nodosa is a nodular concretion consisting of fungus spores; it weakens the hair, which splits and breaks; it sometimes affects the hair of the whiskers, beard, or moustache.

Pigment hypertrophy is called *lentigo*, *ephelides* or *freckles*, when it assumes the shape of localized deposit of pigment; it is most commonly situated in the face, specially about the nose and cheeks; in the pregnant female it is called chloasma uterinum.

It is the ordinary *chloasma* or liver-spots when presenting a circumscribed deposit of pigment, which grows more and more diffuse so as to cover large areas.

Telangiectasis is a condition in which the capillaries are considerably dilated over a larger or smaller area of the skin; it occurs on the face and neck specially, particularly in elderly people, in the form of small spots constituted by small tufts of dilated capillaries. The disease resembles the slighter form of vascular nævus.

Tinea versicolor is caused by a special fungus; it presents roundish, slightly raised, scaly patches, with well-defined borders, a peculiar brownish discoloration; it is very rare on the face.

A *nævus pigmentosus* or *mole* is a simple deposit of pigment

with or without raising of the corresponding part of the skin, with or without an excessive growth of hair. (Morris.)

The *bronze face*, or bronze disease of Addison, or dermatomelasma, is a discoloration due to a peculiar condition of the supra-renal capsules.

Xeroderma pigmentosum, or Kaposi's disease, is a very rare affection; the initial lesions are small pigmentary spots appearing chiefly on the face, neck, and arms; they form numerous tumors which run a rapid course and end in death.

Pityriasis is characterized by a brawny desquamation; it usually occupies the hairy parts; it is much more rare on the face than on the scalp. *Pityriasis rubra* is universal. *Pityriasis rubra pilaris* presents at the orifice of the hair-follicles characteristic papules; on the face the lesions are often of a seborrhœic type, a red base being covered with adherent crusts.

Ichthyosis is a thickening of the epidermis; it is rare on the face. A *scaly face* skin is often met with in old people.

Psoriasis consists of flat, dry patches of variable size covered with white, silver-gray or asbestos-like scales; it rarely affects the face except in young subjects and in inveterate cases. (Morris.)

Hyperidrosis is excessive sweating; it is sometimes limited to the course of the fifth nerve.

Seborrhœa is an excessive secretion of sebaceous matter. *Seborrhœa oleosa* is an excess of oil-like secretion. *Seborrhœa sicca* is excessive secretion of sebaceous matter with excessive proliferation of unaltered epithelial cells. Seborrhœa in both forms is more common on the scalp; but the eyebrows, moustache, and beard are sometimes the seat of dry seborrhœa. On the face the oily form is more frequent, affecting especially the middle third of the face, usually the alæ of the nose and naso-labial groove, also the corners of the mouth and the ears. Seborrhœa most invariably begins on the scalp, then it spreads on the face to the eyelashes.

Dermatolysis is the hypertrophy of the integuments and subcutaneous tissues, which are all loose, pliable, feeling like fatty

tissue; is an exaggerated form of molluscum fibrosum, marked by large flaps or folds of hypertrophied skin. Their common site is about the neck, face, buttock, and chest; the flaps are often deeply pigmented, thickened, indurated, and warty; hypertrophy of the bones and other subjacent tissues may be present also.

Rhinoscleroma is peculiar to nostrils and to the skin around them; it begins by nodules in the cutis, which coalesce to form a hard growth with a smooth glistening surface, which spreads inward from the lips and downward to the pharynx from the posterior nares; it is a rare affection.

Sclerodermia is a diffused thickening and hardening of the skin; the skin is rigid, tense, hard like that of a frozen corpse, but without the coldness; the features are drawn and the face becomes fixed into an expressionless mask. In *atrophic sclerodermia* the skin shrinks and becomes waxy-white in color. The face and upper limbs are the only parts attacked.

Leucodermia is a similar condition, but without hardening of the integments.

Morphœa is a circumscribed sclerodermia, lardaceous in appearance, mottled, with pink areoles; the lesions vary from half an inch to the palm of the hand; the patches or bands on the face sometimes follow the course of the fifth pair.

Morphœa is also called *Addison's keloid;* the face is a favorite site for it; it presents well-defined waxy patches of a pale-pink and yellow color; it is due to some vasomotor disturbances.

White keloid is a kind of sclerodermia, not true keloid.

The *keloid of Adibert* is a different disease, which develops spontaneously on cicatrices, specially on burns.

Scars on the face grow with the body in the course of time.

Neurotic or neuralgic hypertrophy is due to persistent neuralgia, usually affecting one side of the face only; all the tissues, even the bones, participate in it.

Acute circumscribed œdema arises suddenly and subsides rapidly, only to develop in another part. Its favorite seats are the face and the genitals.

Frog face is due to intra-nasal tumors, which, growing toward the face, raise and spread the nose and surrounding structures.

Acquired strumous or *scrofulous hypertrophy* presents the same characteristics as the congenital form.

Acquired syphilitic hypertrophy in adults is rare, but is occasionally observed; it is a general swelling without any of the characteristics of the congenital form; specific treatment is called for.

Elephantiasis or *leprous hypertrophy* presents the characteristic leonine face; it is the tubercular and mixed varieties which have a predilection for the face, nose, lips, cheeks, eyelids, chin, ears. The affected skin, specially in the nodular stage, is often the seat of seborrhœa. This gives the nodules, particularly on the face, a characteristic burnished appearance. The hair in the affected areas falls out. In the vast majority of cases of nodular leprosy the ends of the ears are the first parts affected.

Elephantiasis arabum is a chronic hypertrophy of the skin and subcutaneous tissues; it affects the face rarely. In the infiltrated form the face is affected after the limbs.

Acromegalia affects also the face, including the soft and the bony structures.

Hyperostosis diffuse of the bones of the face, or *leontiasis ossea* of Virchow, was considered by Virchow as a true elephantiasis of the face. There are about ten cases recorded. It most often appears between the ages of ten and fifteen years. It is a rarefying osteitis simple. (Senn.) It usually begins on the superior maxilla, on each side of the nose, or near a molar tooth. It seldom begins by the lower maxilla. It began once by the frontal. It never remains limited to one bone of the face. It develops very slowly and regularly.

Myxœdema is a hard swelling of the face and neck, and later of the extremities; it is also called cachexia strumipriva, cretinoid condition, thyreophraxia; myxœdema and cretinism, however, are totally different diseases. It is a rare disease. It is due to some destructive change, such as fibroid degenera-

tion, interstitial hyperplasia of the connective tissue, syphilis, atrophy of the glands, removal of the whole of the thyroid body ; in some operated cases it is due to the atrophy of the portion of gland which has been left on purpose. The anatomo-pathologic lesions are hyperplasia of the connective tissue of the face and neck and extremities, the connective tissue is increased in quantity and density ; there is excess of mucin in the skin and in the blood ; the hæmoglobin is diminished, the red blood-corpuscles and the fibrin vary. The power of the red blood-corpuscles to take up oxygen may or may not be deficient. The symptoms are : the skin of the face, nose, and later of the extremities is swollen in a characteristic manner ; the speech, the motions, the intellect, all the mental and bodily functions decline ; in young subjects the mental development is arrested. Its course is slow. Its duration extends usually over years. Its termination is death. The preventive treatment consists in leaving a piece of the thyroid body in all cases formerly treated by total extirpation of the organ. The curative treatment consists in giving thyroid extract by the mouth or by hypodermatic injection, or in grafting a piece of the thyroid body of an animal into some part of the body.

Acquired deviations of the face are usually due to injuries, neuroses, indurations, sclerosis, chronic inflammations, gangrene, ulcers, tumors, operations.

Mutilations of the face are on record in which a whole side of the face was natural and the other drawn so as to present the expression of perpetual laughter, such as is depicted in Hugo's *l'Homme qui Rit.*

Swellings of the Face. Swellings of the face are a great cause of deformities. They may be due to the various hypertrophies above described (to strumous tuberculosis, syphilis, leprosy, acromegalia ; to œdema, due to cardiac or renal disease, to neuroses (neuralgia, urticaria), injuries, congestions, inflammations, gangrene, tumors. The face swells rapidly after the least injury or affection, or perhaps it is more readily noticed here. The peculiarities of these causes is to produce

greater and more impressive disfigurement than in any other region. Eczema in children is often followed by much swelling of the face and of the lymphatic glands.

NEUROSES OF THE FACE. *Anæsthesia of the skin* of the face is usually due to the paralysis of the trifacial; it is symptomatic of a lesion of the nerve-centres.

Double paralysis of the face is called *diplegia.*

Facial paralysis, or Bell's palsy, is usually caused by brain lesions, but may be due to the effects of cold on the nerve, of blows, of wounds, or of operations injuring the nerve in some point of its course or at its point of emergence; disease of the temporal bones (fracture or caries), otorrhœa. Its peculiar symptoms are the constant opening of the eye, the prolapse of the cheek, the eversion of the lower lips, the deviation of the face toward the sound side; when the patient laughs the expression of the whole face is most peculiar and characteristic. The treatment varies with the cause.

Facial hyperæsthesia, or *hyperæsthesia cutis,* comprises:

Dermatalgia, or painful skin, or *pruritus,* or itching, specially of the skin of the beard, or of the nares; it is rather rare.

Prurigo is characterized by an eruption of discrete, slightly raised papules, often presenting a blood crust at the top of the papule; it occurs sparsely on the face.

Urticaria presents wheals or patches of skin, flattened, at first red, then white and bloodless in the centre, with a bright red border; the onset is sudden, of a fugitive character. It will swell up the eyelids, the lips, the nose, or the whole face in a few minutes without any premonition, causing much disfigurement. *Urticaria pigmentosa* begins soon after birth; the child is spotted with more or less prominent patches, varying in size from a split-pea to a sixpence piece, and in color from a high red to dark brown; the face is not always spotted. *Urticaria ordinary* affects only the upper layer of the skin. *Urticaria œdematosa* is an infiltration of the subcutaneous tissues.

Facial neuralgia is called *tic douloureux* when the pain is

accompanied by contraction of the muscles; its special cause here is often a bad tooth, although the tooth itself may be painless; the other causes are painful cicatrices, foreign bodies, callus, including a nerve, tumors, inflammation of face, diseases of petrous bone, intracranial tumors; its special treatment in obstinate cases is the stretching or the section or resection of the nerves at their point of emergence, neurectomy and neurotomy, or the removal of the Gasserian ganglion.

Facial spasm is convulsive tic without pain; it is a clonic spasm causing contortions of the side of the face; it ceases during sleep.

Cephalic hydrophobic tetanus may result from the bite of a non-rabid animal; it affects the course of a cranial nerve; the facial nerve is paralyzed on the side of the wound; the symptoms are those of hydrophobia; the face is congested and haggard.

Softenings of the Face. When present they may affect the bones (osteomalacia); they are œdema neonatorum, dermatolysis, acute circumscribed œdema.

Indurations or Scleroses. Indurations, or scleroses, may affect any and all the tissues of the face; they have been described among the malformations; they are: scleroma neonatorum, ichthyosis, rhinoscleroma, sclerodermia, leucodermia, morphœa, scars, myxœdema.

Hyperæmia, or Congestion of the Face. Hyperæmia, or congestion of the face, is nowhere so common in its acute or chronic form. The chronic form is by far more frequent here than in any other region of the body. It is due specially to climate, to age, to habits (drinking), to occupation, to sex, to disease, local or remote, to idiopathic causes. The treatment of these conditions should strike at the causes; when they are local they come within the domain of the dermatologist. Chromidrosis and purpura are mentioned here for want of a better place in this study.

Chromidrosis is a colored secretion of the sweat and sebaceous fluids, usually blue in color, or red, yellow, green, vio-

let; it is usually symmetrical; its favorite site is the eyelids, next the cheeks, the forehead, the sides of the nose, sometimes the whole face and the body.

Purpura is the extravasation of blood in the cutis; it is rare in the face compared with the other parts of the body; it is there most commonly situated in the eyelids. The treatment must be general and directed to the blood.

Inflammations of the Face. Inflammations of the face are very frequent, and present a long list of forms and varieties, springing from all the structures of the face, but specially the skin.

Erythema simplex presents patches of redness, at first scarlet, and afterward pinkish in hue; it has a preference for the face.

Erythema solare is sunburn, and is most frequent on the face on account of its exposure.

Erythema nodosum presents node-like swellings; it is rare, specially on the face.

Lupus erythematosus, unlike the other lupus, is not a tuberculous affection, but inflammatory in character; the lesions usually appear symmetrically on both cheeks, where they form wide blotches which spread inward and meet in a narrow strip over the bridge of the nose, thus giving rise to the butterfly or bat-wing appearance characteristic of the disease.

Miliaria papulosa is prickly heat.

Herpes is a cluster of transparent vesicles of various sizes resting upon an erythematous patch and surrounded by a narrow red zone. *Dermatitis herpetiformis* is a pemphigoid eruption not frequent on the face. *Herpes irritative* is the one which usually affects the lips, the nostrils, also the face, the genitals. *Herpes zoster* follows the divisions of the fifth pair, specially the supra-orbital branch.

Eczema is characterized by a vesicular eruption; it is not uncommon on the face of strumous children; it is not as frequent on the face as on the body; it affects particularly the nostrils, the upper lip, the chin, where it is often confounded with sycosis, but it presents no indurated nodules, no cicatricial alopecia.

Eczema seborrhoicum is the usual and special form that attacks the face; it is of parasitic origin, involving the sebaceous glands; it is characterized by redness and greasy scales; it attacks the hairy parts of the face and causes loss of hair; it is, as a rule, an extension from the scalp.

Eczema parasiticum is a serpiginous eruption, of a catarrhal character, in which the principal lesion is a rapidly forming pustule, which also breaks rapidly; these pustules limit the periphery of the patch, which spreads after the manner of a ringworm.

Unna recognizes three absolutely distinct types of *eczema of the face in infants*—the nervous, tubercular, seborrhœic. The *nervous form* occurs during dentition; it is symmetrical in distribution, and usually affects the middle of the cheeks, then the forehead, and almost at the same time the radial side of the back of both hands; the itching is intense, and the healthier the child is, the worse the symptoms seem to be; on the appearance of a few teeth the eczema dies away, probably to come out again a few days later. The *tubercular form* is localized in the neighborhood of the eyes, nose, mouth, ears, and is often associated with scrofulous rhinitis, otorrhœa, and adenitis; there is little or no itching. The *seborrhœic form* usually begins in the scalp; in rare cases from the margin of the eyelids.

Impetigo contagiosa is a purulent eruption caused by inoculations of the pus cocci; the face is most frequently attacked, the lesions being thickest around the mouth, nostrils, chin.

Pemphigus is characterized by large vesicles or bullæ, filled or collapsed; it is rare on the face.

Dermatitis is the inflammation of the skin in its general and specific definition; it is a rare affection.

Tinea circinata is the ringworm of body or hairless parts of the skin; it attacks often the face, the neck, the hands.

Tinea barbæ, or *tinea sycosis*, is the ringworm of the beard; it affects specially the chin. *Tinea trichophyton barbæ*, or barber's itch, is a mycotic contagious disease characterized by grouped, scaly, crusty, pustular lesions assuming a circinate

form. *Tinea tonsurans* is the ringworm of the scalp. *Tinea versicolor* presents roundish, slightly raised patches with a well-defined border; it seldom affects the face.

Favus is a parasitic, scabby affection; it is characterized by a sulphur-yellow disk depressed in the centre like a cup, and pierced by a hair; the scalp is the site of preference, but the face and any other part of the body may be attacked.

Acne is the inflammation, acute or chronic, of the sebaceous glands; it is almost a disease special to the face, the cheek, nose, forehead, and chin, and next of the back of the neck, the back between the shoulders, and the chest. It is very frequent here and comparatively rare everywhere else. It often leaves small white scars. *Acne vulgaris* is the most common. *Acne juvenilis* is observed at puberty. *Acne mensis* coincides with the menstrual periods. *Acne punctata* is a slight inflammation produced by the retention of the sebaceous matter; it is called *comedo* if it presents a black spot. *Acne indurated* is characterized by redness with induration. *Acne pustular* presents a point of suppuration at the apex of a tubercle. *Acne rosacea* begins on the nose and then spreads on the face; it presents redness, pimples, patches, and injection of the capillaries. *Acne hypertrophic* is an advanced stage of acne rosacea, due to hyperplasia of the tissues producing tubercular and pedunculated small masses, the lipoma nasi. *Acne varioliformis* is papular, and after suppurating leaves a small depressed, permanent scar, resembling a small-pox pit; it is sometimes called *acne necrotica;* the forehead is the portion most commonly affected, hence the name also of *acne frontalis.* *Acne keratosa* is one in which the place of the comedo is taken by a horny plug.

Darier's disease, or *follicular vegetating psorospermosis*, or *acne cornea*, is characterized by small brown-yellow crusts, which when detached, present a softish prolongation which dips into a follicle; it may affect the face, but less frequently than other parts of the body.

Bromide eruptions are papules, vesicles, wheals, bullæ, or erythematous patches usually papulo-pustular; they are mostly

facial (bromic acne); it often presents a variety called confluent acne, in women and children.

Iodic eruptions are erythematous, papular, urticarial, vesicular, bullous; the erythematous form is the most frequent.

Arsenic eruptions are papular, urticarial, petechial, vesicular, and pustular.

Chloral eruptions are erythematous, and begin usually on the face, and spread.

Copaiba and cubebs eruptions are erythematous and resemble scarlet fever; they show best on the face, neck, and trunk.

Opium eruptions are scarlatiniform; sometimes morbelliform, consisting of small discrete spots, bright or dusty red in color; the usual sites are the face, neck, and flexor surfaces.

Quinine and cinchona eruptions are eczematous; the face is also affected.

Iodoform eruptions are usually erythematous; they affect usually the hands, arms, and face.

Sudamina, or *miliaria crystallina*, is an eruption of pearly vesicles resembling dew-drops, of the size of a point of a pin to a sago grain; it is simply imprisonment of sweat; it is rare in the face.

Pellagra is characterized by an erythematous eruption affecting parts chiefly exposed to the sun; it prefers the face and the hands; the skin is swollen, tense, bullous, followed by ulcers; after each acute attack desquamation takes place, and the underlying skin is thickened and pigmented; the parts become atrophied, dry, weazy, as in old age.

Acrodynia is allied to pellagra; it presents dry, erythematous patches, but it seldom affects the face.

Lichen ruber planum is formed of small, irregularly shaped papules, flat on top, and sometimes umbilicated; it seldom affects the face.

Mycosis fungoides is characterized by dull-red or livid patches, of the size of the finger-nail to the palm of the hand; the patches become scaly, then moist and covered with crusts. In a later stage the moist surface gives rise to tumors as small as a pea, or as large as an apple; it is rare on the face.

Almost all the *eruptive exanthemata* begin by the face, specially variola, and excepting varicella.

Furuncles, or boils, most frequently affect the face, the neck, the buttocks.

Carbuncles of the face are comparatively rare. Furuncles, and specially carbuncles, are particularly grave about the face, because of the septic absorption by the facial vein and its direct conveyance to the sinuses of the brain. Carbuncles should be freely incised or curetted at the very outset.

Erysipelas of the face is common; it is usually due to some lesion in the interior cavities, buccal, nasal, pharyngeal, Eustachian tube, external auditory canal. It emerges from the tip of the nose or from the lachrymal points, or from the external auditory canal. When it travels first through the Eustachian tube and the middle ear it is preceded for two or three days by most agonizing pains. It is more serious here than anywhere else, because of the propagation to the brain and membranes. It seldom stops until it has gone over the whole face and head, seldom extending beyond the neck to the trunk. It usually leaves the features coarser than before its advent. Of course, the interior cause must receive proper attention during the attack, and also after, in order to prevent a return; it requires here no particular treatment. Erysipelas of the face is sometimes complicated with pericarditis, myocarditis, and often with endocarditis.

Malignant pustule is also comparatively frequent for the same reason, of easy access of the face; it is more fatal here because the radical means of treatment are not so easily applied as on the hands; also because of the close proximity of the brain and its sinuses.

Glanders shows externally first by an inflamed and ulcerated condition of the nostrils and upper lip. *Cellulitis* is rare, because of the adhesion of the skin to the muscles, and of these to the bones. Inflammations of the face do not spread easily for the same reasons.

Septic inflammations are often followed by much swelling,

œdema, and hardness. They should be treated as in any other regions.

Cellulitis is due, usually, to diseased teeth or to osteoperiostitis of the jaws.

Abscesses are also comparatively rare; most frequently they originate from the root of a decayed tooth. Abscesses of the face should be incised with the greatest care, bearing in mind the direction of the folds or wrinkles, of the vessels, of the nerves, of Steno's duct; all this on account of the scar that may follow. For these reasons it is often best, when circumstances permit, to let them open of themselves, when the scar is reduced to a small, round, white spot, less noticeable than a cut.

Phlebitis of the facial vein is rarely primary; it usually follows other inflammation of the face, specially furuncles and carbuncles, and particularly those of the upper lip. It is characterized by rapid swelling with œdema, intense pain, sensation of strangulation; the face is deadly pale, the course of the veins marked by blue lines; there exist hard cords, due to the inflamed veins. When the inflammation extends to the ophthalmic there is exophthalmia.

Periostitis or *osteitis* will be found described later when treating of the diseases of the maxilla specially. We will, however, mention here that an important rule is that when the pieces of diseased bone are loose and are to be removed, this should be done by dilating the sinus and not by cutting, as the dilatation will leave a smaller scar.

Gangrene of the Face. Gangrene of the face is rarely primary, it is usually due to injuries, to carbuncles, to malignant pustule.

Cancrum oris, or *noma*, is special to the cheeks. Great solicitude is necessary to limit the following deformity as much as possible.

Raynaud's disease is symmetrical gangrene of the extremities, including in this term the tip of the nose and ears; the sites in order of frequency are the fingers, toes, heels nose, ears.

Ulcers of the Face. Ulcers of the face are compara-

tively common, and are, on account of the situation, of peculiar chagrin to the patients.

Ulcers simple are comparatively rare.

Ulcers scrofulous or *strumous* are more frequent, particularly those due to the various skin diseases.

Ulcers tuberculous are the most frequent outside of syphilis; they are called lupus, and the face is a favorite site of these diseases.

Lupus erythematosus is not tuberculous, and has been described above.

Lupus nonexedens is characterized by an eruption of pale or reddish tubercles which ulcerate, become covered with white scales and scabs, which, on coming away, leave behind a smooth, white, depressed cicatrix.

Lupus exedens destroys by ulceration; lupus nonexedens destroys by atrophy; their favorite site is the face.

Lupus vulgaris, or malignant herpes, is also a form of tuberculosis of the skin, due to the bacillus. It appears specially on the forehead, cheeks, nose. The lesions are small tumors on the skin, of apple-jelly color and consistency, smooth, tending to ulceration. It is more grave; it resembles epithelioma, but is less painful; the edges are not so hard and elevated; the favorite site of herpes is the face, specially the nose and the neighboring part of the cheeks.

Lupus nodular usually attacks the cheeks near the junction of the alæ and upper lip. It presents more or less localized nodules, tubercles, nests, reddish or yellow-pink; often gelatinous.

Lupus diffused affects the cheeks and nose more frequently. It is superficial, less inclined to form nodules and nests.

Lupus seborrhagicus (Volkmann) presents on the cheek and nose irregular reddish patches covered with dirty looking thin crusts, fatty to the touch. After partially scraping off the scab, the underlying skin appears red, sore, as if studded with fine warts, but when covered with a lens one sees a large number of fine holes, which are the enlarged openings of the

sebaceous ducts; each single fatty crust has a fine prolongation, which becomes detached from each small opening.

Ulcers of the face which resist ordinary treatment should be cocainized and curetted; if necessary, they should be extirpated like cancers.

Ulcers syphilitic are common in all their forms and varieties: papular, tubercular, rupia, etc. General specific treatment is indispensable.

Chancre indurated may occupy any part of the face, but it is more frequent around the mouth; they are sometimes two or three in number; it is usually accompanied by a hard, and purple œdema with greater glandular enlargement than in other situations.

Chancroids, or soft chancres of the face, have been positively observed, but are very rare.

Ulcers syphilitic tertiary are tuberculo-ulcers, and resemble lupus; they often present here a rapid evolution, are rebellious to specific treatment, destroying soft parts and bones alike, followed by destruction of nose and cicatrices, causing atresia and ectropion of the natural orifices. *Arsenical chancres* on the face are the types of the kind.

Biskra button, or Aleppo boil, is a tropical disease beginning by a boil which leaves a foul ulcer; it is due to a parasite.

Yaws, or *frambœsia*, is a very rare disease. It may appear first on the lips. It presents reddish papules, tubercles, or tumors, studded with yellow points which ulcerate; sometimes the papules are arranged in rings specially around the eye, nose, mouth, and the genitals. Tertiary ulcers of yaws are also common about the lips.

Ulcers cancerous are limited usually to the skin, although cancers of the deeper tissues, and specially the bones, finally ulcerate. Cancers commencing on the skin are the epithelioma squamous and the ulcer rodent.

Ulcer rodent is a form of epithelioma. It is remarkable that almost every case of ulcer rodent has its seat within an area bounded by a line drawn from the uppermost point of

the pinna to the root of the nose and another drawn from the lobule of the ear to columella of the nose; it exceptionally occurs on the hands. It must be thoroughly curetted or destroyed by pastes, or extirpated.

Epithelioma is the most common of all cancerous affections of the face, which is a favorite site for it. It is important to remember its forms and varieties, the *superficial or flat epithelioma* presenting scales, or a grouping of papules or inflamed sebaceous outlets; the *indurated* or *circumscribed;* the *papillary;* the *infiltrated* or diffused, which resembles the condition of chronic inflammation; sometimes it begins by separate spots which coalesce; there is no elevation of the diseased parts. Epithelioma of the face when small should be curetted or attacked with pastes; but when of a certain size, or deep, extirpation is the best remedy; early interference is most desirable to avoid large scars. In operating, grafting and plastic operations must be resorted to to reduce the cicatrices and deformities to a minimum. The lymphatic glands receiving the lymphatics from the infected parts should be removed if in the least indurated; because of the neglect of this it is common for the disease to show on the parotid region or the submaxillary, requiring there much more dangerous and extensive operations for the eradication of the disease.

Scrofulodermia of the Face. Scrofulodermia is the general name for all diseases of the skin of a strumous or scrofulous nature. We must bear in mind that scrofula is a particular constitutional state in which bacilli, specially tubercle bacilli, readily flourish, but not tubercles alone; the lesions in scrofulous subjects are apt to take on a character of chronic inflammation of a peculiar type, in which tendencies to suppuration and formation of unhealthy sores are the most marked features.

Lichen scrofulodermia is a papular eruption, the elements of which are not larger than a pin-head, are flattened, and very slightly resistant; it is very rare on the face.

Erythema induratum scrofulosorum is formed of chronic inflammatory, deep-seated nodules; it is rare on the face.

Strumous dermic gummata, or scrofulo-tuberculosis, or attenuated tuberculosis, are characterized by the evolution toward caseating and the formation of a cold abscess.

Ulcers strumous are due to the extension of the inflammatory process from caseating lymphatic glands to the skin covering them, or to the formation of a nodule or circumscribed induration under the skin, or to extensions from bone which is the seat of tuberculous osteomyelitis; they are common on the face and on the hands.

TUBERCULODERMIA OF THE FACE. *Ulcers tuberculous* due to primary tuberculosis of the skin, ulcers with infiltrated, ragged and undermined edges and a slightly indurated floor, covered with yellowish tubercles, moistened with a thin and seanty secretion, may occur on the face, on the hand aud elsewhere. They are sometimes due to breaking down of small tuberculous nodes preceding or following pulmonary or intestinal tubercles; they are generally situated at the junction of the skin and mucous membrane about the corner of the mouth and margin of the nares, specially in cases of lung disease. Lupus are tuberculous ulcers. The treatment of these diseases has already been described.

SYPHILODERMIA OF THE FACE. Syphilodermia means all the diseases of the skin of syphilitic origin. *Primary sores* or *chancres* have already been mentioned above; they may occur on the lips, cheeks, tongue, from smoking infected pipes, from using infected glasses, forks, spoons, and from kissing; from dentists' instruments; from unnatural practices. Of the *secondary manifestations* the eruptions affect usually the face last; they may be papular, tubercular, with or without ulceration, rupia, or alopecia of the beard, eyebrows, eyelashes. Small papulæ may form a kind of circlet on the brow around the margin of the hair (corona veneris). The more common position of *tertiary syphilitic lesions* is the forehead and the margin of the sealp. In *congenital syphilis* the face sometimes presents a senile aspect. *Tertiary ulcers* have already been mentioned above. The treatment must be particularly general and specific.

Fistulæ of the Face. Fistulæ of the face are not very common; they may be congenital, as said above, and be of branchial origin; they may be lachrymal or salivary, or due to an incised cyst which does not heal, or to a carious tooth or diseased bone, or an ulcerated spot of the maxilla. One of their peculiarities is the scar that follows their healing, and which most commonly tells of a disease of the bone, so objectionable here. They should be treated as similar cases in other situations.

Tumors of the Face. Tumors of the face proper are tumors of the soft parts developed in the skin or between the skin and the bones or the mucous membrane. Some tumors of the face originate from the spheno-maxillary fossa and become superficial on the cheek. These will not be considered here.

Tumors of the face will be studied here according to the clinical classification of gaseous tumors, liquid tumors, solid tumors.

Of the *tumors, gaseous*, we will mention here *emphysema circumscribed* of the face, due to fractures and dislocations of the nasal, lachrymal, and superior maxillary bones, or to rupture of the nasal mucous membrane with penetration of air in the tissues. It calls for prompt reposition of the bones and pressure to prevent the spreading of the disease to the neck and larynx.

Of the *tumors, liquid* (serosity, blood, pus), the following points of peculiar interest apply to them:

Cystoma of the face is sebaceous (oily) sudoriparous, branchial, salivary, serous, and multilocular.

Cystoma hydatid of the face is very rare, but exists. It is not easily diagnosticated unless punctured. Sometimes the puncture effects a cure. It is well, therefore, to wait before extirpating them. *Cystoma sanguineous* presents nothing special. *Cystoma purulent*, or chronic or cold abscess, is also uncommon.

Hæmatoma liquid should not be punctured nor incised, but should be aspirated in time if it resists compression.

Aneurisms of the face are rare; they are usually traumatic; a lymphatic gland raised by the facial artery may be mistaken for an aneurism.

Ectasis of the facial vein has been observed once near the commissure.

Varix ampulla plexiform is rare on the face.

Angiomata, or *tumors erectile*, or of all kinds, from the birthmark to the deep venous and arterial, and from the small or limited to the broad and diffused, are rather common on the face. The same means should be employed here as elsewhere, bearing in mind the cicatrix and deformity that will follow.

Angiokeratoma does not affect the face. It is characterized by the development of capillary telangiectasis with small warty growths.

Lymphangioma circumscriptum cutis is characterized by the formation of vesicles forming patches of greater or lesser extent. It has been found on the face, limbs, neck, and shoulders. The essential features of the condition are overgrowth and dilatation of the lymphatic vessels. It should be curetted or extirpated.

Lymphangioma simple or *cavernous*, of the face, is frequent; the face is its site of predilection; it is always congenital; it corresponds to what is called congenital hypertrophy, and may be limited to one region. When incised the lymph runs from it.

Macromelia is the congenital hypertrophy of the cheek.

Lymphangioma cystic of the face resembles multilocular cysts of the neck. The cheek is raised by a tumor of a variable size, almost round, limited or diffuse, lobulated, with ill-defined fluctuation; it may extend under the zygomatic arch. Upon a superficial examination it resembles œdema, but by palpation isolated hard nodules are felt.

Cystoma purulent or cold abscess is uncommon on the face.

Tumors solid of the face. Foreign bodies present no peculiarities except the disfigurement caused by their presence.

Cellulitis circumscribed is rare.

Lymphadenitis chronic is also rare on the face, because the glands are few and far between on the face proper.

Œdema circumscribed is characterized by œdematous swellings, isolated, well defined, reddish or red in color, smooth and glistening on the surface, varying in size from a twenty-five-cent piece to the palm of the hand. They present no pain, no itching. They often run a very acute course. It is described here for lack of a better place.

Urticaria chronic is characterized by wheals, varying in size from a lentil to a haricot bean, persisting as long as three months. It is also described here for lack of a better place.

Molluscum contagiosum is an infective disease (psorospermosis). *Warts* also.

Strumatoma, or strumous tumor, presents a nodule or circumscribed induration under the skin; later it forms a subcutaneous scrofulous abscess. As to *tuberculoma*, as a tuberculous deposit in the form of a tumor it is rare on the face outside the bones.

Lupoma is the nodule of lupus nodular; it is brownish-red and translucent, resembling apple-jelly.

Verruca necrogenica is also a tuberculous affection; it is rare on the face.

Chancre syphilitic indurated is most rare on the face; also *warts venereal* or verruca acuminata. *Syphilid tubercular* is specially well marked on the face. *Syphiloma* (gumma) presents no peculiarity. *Syphiloma diffuse* of the face exists and resembles leprosy; it usually follows syphilis of the lip.

Glanders and *farcy-buds* affect the nasal and labial regions particularly.

Leprosy often begins on the face.

Actinomycosis circumscribed also, specially on the lower jaw, has been observed under the form of tubercles, hard, immovable, indolent, soon forming abscesses, and then ulcers. It is distinguished from all other similar troubles by the special parasite.

Mycosis fungoides (a tumor of the verrucose type) is rare on the face.

Filariasis is rarely observed in this region.

Hæmatoma solidified, traumatic or aneurismal, is not rare. It is most commonly seen on the face; the eyelids are its favorite situation. It should be incised with as small an opening as possible on account of cicatrix.

Lichen pilaris is characterized by conical, solid, epidermic elevations of the size of a pin-head at the opening of the follicles. It is rare on the face.

Corns do not exist on the face. *Callosities* are rare. *Horny excrescences* have their site of predilection on the face.

Epithelioma adenoides cysticum is formed of small tumors, at first of the same color as the surrounding skin; when increased in size they become shining and translucent, but hardly sufficiently so to suggest that they contain fluid. They are firm, but not hard, and can be felt to be embedded in the skin. They contain one or more minute white or brightly refracting milium-like bodies. They are multiple.

Ichthyosis warty presents a skin which is dry, scaly, and warty.

Ichthyosis histrix is characterized by small papillary growths with horny tops, which stud the skin as with tiny nail-heads; it is multiple.

Warts are papillary hypertrophies. Warts, condylomata and molluscum contagiosum are of an infectious origin, are inflammatory swellings and not true tumors. They may be small or large, and this affects their mode of treatment. They present the following varieties: the *vulgar, plane, filiform, digital, acuminated, sessile, pedunculated.*

Flat warts (verruca plana) in young persons are most common in the face, particularly the forehead. Warts (verrucæ) come and disappear mysteriously. They increase in size much more rapidly than papilloma, and they often disappear spontaneously.

Verruca seborrhœica, or *seborrhœic wart*, consists in mul-

tiple patches of warty growth; the face is rarely attacked; it is most common in old people.

Nævus pigmentosum or *mole* consists of pigmentary macules or slightly raised pigmentary patches. Sometimes they consist of a pigmented papilla. Moles are more common on the face, neck, trunk, etc. They are called *nævus spilus*, or *pilaris*, when they are covered with hair more or less abundant.

Acanthosis nigricans is a peculiar pigmented condition of the skin with warty growths; in the few cases on record the pigmentation has occurred more or less suddenly; the face is first affected, then the neck, etc.

Adenoma sebaceum occurs chiefly on the face; it consists of firm, whitish or yellowish solid tumors firmly embedded in the skin at different depths, or projecting from it; they are sometimes grouped about the end of the nose; they vary from the size of a pin-head to that of a pea; sometimes they are red, owing to the dilatation of the capillary veins on their surface. The lesions are usually symmetrical, and though thickly crowded together they do not run together to form patches; they present no opening; when pinched inspissated sebum can be squeezed out of them. It is usually congenital, though further crops of lesions appear after birth, specially at puberty. They undergo little change; telangiectasis, acne rosacea, warts, nævi keratosis, pilaris, etc., often coexist with adenoma sebaceum. The patients are usually of a low grade of mental development.

Cystoma sebaceous soft, or *cystoma sebaceous* hard, or *steatoma*, is most commonly seen on the face near the scalp; usually the dissection here is more difficult than might be thought at first.

Cystomata dermoid may occur on the face occasionally. They are sometimes very numerous and resemble fibromata, but on cutting into them a sebaceous-looking material escapes. Dermoids of the face are congenital; they occur in the lines of the facial fissures of the embryo in certain definite positions, such as the inner and outer angles of the orbit (specially

the inner), the upper eyelid, on the naso-facial sulcus, on the cheek, slightly posterior to the angle of the mouth; in the middle line of the nose, of the chin. They seldom grow larger than a filbert; they sometimes contain only pure oil; they are firmly attached to the depressed bone.

Comedones are pimples with a black spot in the centre; when squeezed sebaceous matter oozes out that resembles a small black worm; they are most frequent on the face, about the nose, the cheeks and the forehead; when very numerous they produce an appearance like grains of gunpowder embedded in the skin; when squeezed out they look not unlike small maggots; a parasite, the demodex or acarus folliculorum is sometimes found in comedo. Grouped comedones have for favorite situation the flesh area of the face, and they form symmetrical groups of black comedones smaller than the ordinary comedones.

Acne cheloid is due to the keloid growth of the cicatrices of comedo.

Acne indurata is a hard, red or purplish nodule developing in the sebaceous gland, which seldom ruptures, but leaves a livid indurated swelling which slowly disappears; the face is the favorite site.

Acne teratosa resembles an acne in which the place of the comedo is taken by a horny plug.

Milium is a white and pearly mass of the size of a millet-seed, due to an accumulation of sebaceous matter in the duct of the gland, not in the gland itself. Milium is seen most frequently on the face, specially on the cheek, eyelids, temples, forehead. On the eyelids it specially unites together, forming flat masses, which are sometimes so hard as to deserve the name of *cutaneous calculi*. A *variety* found on the face present under the form of tiny disks, with a minute slightly depressed puncture in the centre, suggesting fatty degeneration of the epithelium around a follicle.

Milium colloid is characterized by a small, translucent, yellow cyst-like formation on the skin, chiefly on the upper part of the face. It contains a gelatinous material. Colloid

milium, or *colloid degeneration of the dermis*, affects the fascicles of the connective tissue, partly also the walls of the vessels between the hair follicles and the sebaceous glands, but these remain intact. It is encapsulated. It begins in the malar region, and may extend to the ear and eye; it is refractory to treatment. Milium colloid confluent may form regular patches. The size is that of a pin-head or a millet seed. It is not very prominent. The tumors are yellow; they are shining.

Molluscum sebaceum is a projecting tumor formed of a dilatation of a sebaceous gland, due to the accumulation of the secretion inside of it.

Molluscum contagiosum is a small pedunculated or sessile growth of the size of a pin-head to that of a pea, with an open orifice, giving exit to sebaceous matter upon squeezing it. It is due to hypertrophy of the gland, not to retention of secretions; it seldom attains a large size on the face. A *variety* is formed of small growths, like tiny mother-of-pearl shirt buttons, with a central depression and a hole leading to the tumor; at first it is sessile, but becomes pedunculated; it is most common on the face, the eyelids being a favorite situation.

Molluscum epitheliale is a tumor-like hypertrophy of the epidermis, umbilicated, pearly looking, sessile, varying in size from a pin-head to that of a split pea. The lesions are usually grouped, multiple; it is considered contagious; it affects specially the eyelids at the inner angles.

Cystoma sebaceous is usually intracutaneous. It ordinarily remains single. The black spot is the rule; it is round and immovable.

Cystoma dermoid is frequently congenital; it often contains hair, and sometimes pure oil. The neighboring bone shows a shallow or deep depression after its removal. It occurs on the lines of the facial fissures in the embryo, in certain definite positions, such as the inner and outer angles of the orbit, the upper eyelid, in the naso-facial sulcus, on the cheek, slightly posterior to the angle of the mouth, and

on the nose. The most frequent location is the outer angle of the eye. When it occupies the inner angle of the eye the nasal process of the frontal bone suffers from pressure atrophy. It seldom exceeds the size of a filbert. The skin is normal. Fluctuation is distinct. The depression on the bone caused by the tumor diminishes somewhat after their removal, but is never entirely effaced, a matter to be taken into consideration when patients, specially young girls, request an operation for cosmetic effect.

Xanthoma is a sort of myxo-lipoma; it is formed of an accumulation of large cells of the connective-tissue type filled with fat drops. Xanthoma is called fibro-lipoma by Virchow. It has been described as an endothelioma, but the cells of the latter contain no fat except as a product of degeneration. It consists of large fat cells with a reticulated protoplasm. It is sometimes quite diffuse and large. It is usually found upon the eyelids. The coloring material is lipo-xanthin, belonging to the class of blood pigments. It may occur as a primary lesion in other parts of the body, more especially when the skin is exposed to repeated injuries.

Xanthoma planum is in the form of plates; they vary in size from a pin-head to that of a finger-nail. The larger plates are often composed of groups of smaller ones. They are so soft as to be often imperceptible to the touch when the fingers are drawn over them. The skin over them is normal. It usually begins on the upper lid near the inner angle on one side; it soon makes its appearance on the other side. Sometimes a *zone of xanthoma* is found, looking like a circle of wash-leather, beneath the lids. It may affect the nose, ear, etc.

Xanthoma tuberosum is formed of papules varying from a millet-seed to a pea or larger; the smaller tumors are soft, while the larger ones are firm and more prominent, standing on an inflamed base, and being painful on pressure. *Xanthoma in tumors* is the one in which very large lesions are formed.

Xanthoma multiple is almost always of the nodular form.

Xanthoma of Balzer is characterized by hypertrophy and deformity of the elastic tissues in limited areas of the skin;

consists in slightly raised lenticular pinkish-yellow areas, soft to the touch, and having no inflammatory zone around them.

Xanthoma elasticum is formed by the hypertrophied and deformity of the elastic tissues in a limited area. Myxœdema may be regarded as a diffused myxoma.

Fibroma molluscum is a pea-shaped or rounded fibrous tumor covered, as a rule, with a smooth skin and varying in size from a pin-head to that of an orange.

Fibroma diffuse is a variety of fibroma molluscum in which the tumors are large and attached by broad bases. They are usually multiple, and overlap each other, forming folds of loose skin with dilated sebaceous orifices. It must not be confounded with elastic skin.

Fibroma hard may arise in the corium, but may start in the sheaths of the nerves; the latter, called *neuro-fibroma*, are rare on the face.

Nævus pigmentosus or *mole* is not a vascular tumor; it consists of raised pigmentary patches, with or without growth of hair.

Keloids are most common after burns. Addison's keloid is not a keloid proper, but a form of morphœa. The keloid of Adibert develops spontaneously on cicatrices, specially of burns. Do not extirpate a growing keloid.

Lipoma is not often met with on the face; it is usually small and numerous, as in all situations where the bones are superficial; it is sometimes congenital.

Myoma may occur on the face, but very rarely.

Chondroma is rare.

Congenital branchial fibro-chondromata, also called auricular appendages, supernumerary auricles, congenital appendices of the face, are not very rare; they are congenital. The surface is formed of skin; in the centre is often found a cartilaginous stem; they are most common in front of the tragus or on it; but they can also occur in all the regions of the branchial arches, also on the cheek on a line joining the external auditory canal to the labial commissure, or below the line; in one ear, on the lower lip, under the mucous mem-

brane. They are excessively rare in the other regions of the face; they are about one-third of an inch long; their shape is conical, or club-shaped, or pedunculated; in the preauricular region they are often multiple and arranged in pairs along a vertical line, and may be symmetrical. After birth they seem to increase, and then they remain stationary. Sometimes they are associated with branchial fistula.

Osteoma of the malar bone is occasionally met with.

Lymphoma of the face, primary or secondary, is very rare.

Lymphoma tuberculous is rare, as the lymphatic glands are small, few, and far between.

Lymphoma syphilitic, also.

Neuroma of the facial nerve is very rare.

Ulcer rodent or *cancroid* is the superficial cancer of the face; it is a variety of epithelioma superficial. It is indolent or slightly itchy. It is seen also in other situations, but it is much more frequent on the face, at the internal angle of the eye and upon the side of the nose. There is a slight tumor, not only an ulceration. It does not differ from any other ulcer simple except by a small indurated rim. The bottom is red, non-granulating, mammillated. It is partly free, partly scabby. The edges are sometimes irregular, festooned; they are not excavated, but perpendicular and slightly everted, craggy. The base is resistant, extending slightly beyond the ulcer. The smell is fetid, due to sanious secretions. The glands are seldom involved. The general state is good, in spite of the destruction of the whole face. It begins insidiously on a pre-existing lesion, on a small elevation or an erosion. It begins as an ulceration. It extends very slowly, often by small isolated nodules. It destroys all the structures, the bones as well. The whole face may be destroyed. The centre sometimes cicatrizes, but it again becomes ulcerated. It is sometimes multiple.

Cancroid of lupus is an ulcer rodent developed in a lupus in activity (*i. e.*, not ulcerated); it may be vegetating or ulcerating. It is more grave than the ordinary ulcer, its course is more rapid, the glands become involved.

Epithelioma is the cancer of the face.

Carcinoma of the face attacks most frequently the eyelids, the nose, the malar and frontal regions.

Multiple carcinomata of the face are exceptional; they almost always originate from senile warts. Peripheral extension is rapid, but the destruction is limited to the skin. In the *deep or penetrating* variety the ulceration extends at the same time in the direction of the base of the ulcer, involving successively different tissues, irrespective of their anatomical character. The ulceration is generally preceded by a deep infiltration of the skin and the subcutaneous connective tissue.

So long as the papillæ remain the superficial surface presents a papillary appearance, but when they are destroyed the epithelial nests become emptied of their contents, and the surface of the ulcer presents a honeycomb appearance. The ulceration spreads rapidly.

Scirrhus is rare.

Sarcoma of the skin, according to Baker, is the most frequent source of sarcoma, but Kaposi says that in the majority of cases the process in the skin is secondary to growths arising in the lymphatic glands or the deep structures. Sarcoma of the face is sometimes congenital; the melanotic form is relatively frequent on the face; it often follows ordinary angioma or pigmentary nævi. Sarcoma of the skin of the face often starts from scars or from a wart, papilloma, or fibroma of the skin. The *sarcoma melanotic* is the most frequent.

Xeroderma pigmentosum (Kaposi's disease) is extremely rare. It always begins between the third month and the end of the second year. Almost all patients are country people. Sometimes several children are affected in the same family. There is no direct heredity. In some cases there is a history of cancer. The lesions occupy specially the uncovered parts, and it is these especially which ulcerate, particularly those near the mucous orifices. It begins by an erythematous eruption which descends from the face to the chest. Next appear spots, pigmentary or telangiectasic. Atrophic lesions show after a while. Epithelial tumors develop which resemble papillomata.

Some of these are eliminated and leave a small scar, like variola. Some ulcerate, dig, and destroy. The glands become involved. The patient becomes cachectic. Death occurs toward the twenty-fifth year. The course is increased by the stimulating action of the air.

Relative Frequency of the Disease of the Face. Upon going systematically over the long list of the numerous diseases of the face we find that with regard to frequency, those diseases may be classified as follows:

1. The *diseases which are seen on the face only, and never anywhere else* are: rhinoscleroma, lupus erythematosus, acne juvenilis, acne mensis, acne rosacea, acne hypertrophic (lipoma nasi), salivary fistulæ, lachrymal fistulæ, tinea barbæ, or sycosis, and tinea trichophyton, or barber's itch.

2. The *diseases which affect the face and are seldom seen anywhere else* are: branchial fistulæ (also in neck), evidences of congenital struma, of congenital syphilis; simple congenital hypertrophy, congenital syphilitic hypertrophy of the face, asymmetries, anidrosis, comities, trophoneurosis (neuralgic atrophy and hypertrophy), hirsuties, telangiectasis, seborrhœa oleosa, acquired strumous hypertrophy, acquired syphilitic hypertrophy, myxœdema, burns from acids, frost-bite, acute circumscribed œdema, knock-out blows, gunpowder stains, poisoned wounds (stings), malignant pustule, glanders, chromidrosis, erythema simplex or solare, herpes irritative (labialis), eczema seborrhœic and infantile, impetigo, tinea tonsurans, tinea barbæ or tinea sycosis, favus, pellagra, acrodynia, Raynaud's disease, cancrum oris, epitheliomatous ulcers.

3. The *diseases which are more or less frequent on the face or which are more marked there than anywhere else* are: birthmarks, lentigo, chloasma uterinum, nævus pigmentosus or mole, pityriasis pilaris, scaly skin, dermatolysis, sclerodermia, leprous hypertrophy, secondary hemorrhage after lacerated wounds, miliaria papulosa, acne vulgaris and punctata, drug eruptions, exanthematic fevers, furuncles and carbuncles, swellings, scrofulous and tuberculous ulcers, syphi-

litic ulcers, scrofulodermia, syphilodermia, paralysis, urticaria, neuralgia, angioma, lymphangioma circumscribed, milia, molluscum sebaceum, molluscum contagiosum, molluscum epitheliomatum, sebaceous cysts, nævus pilaris, warts, xanthoma, adenoma sebaceum, epithelioma, adenoides cysticum.

4. The *diseases which seldom affect the face* are: atrophy (of the whole face), œdema neonatorum, pigment atrophy or vitiligo, chloasma ordinary or liver spots, ichthyosis, leucodermia, tinea versicolor, pityriasis rubra, psoriasis, elephantiasis arabum, acquired deviations, pemphigus, dermatitis, fractures of malar and nasal bones, purpura, erythema nodosum, sudamina or miliaria, phlebitis, periostitis, osteitis, necrosis, fistulæ, anæsthesia, hyperæsthesia, pruritus, prurigo, aneurisms, dermoid cysts, lipoma, myxoma, syphilitic gums, carcinoma of skin, colloid of skin, horny excrescences, lichen pilaris, acanthosis nigricans, keloid, neuroma, fibroma, myoma, chondroma, osteoma, xeroderma or Kaposi's disease.

5. The *diseases which have never been observed on the face* are: callosities, dermatitis repens, diabetic gangrene, glossy skin, localized atrophy of skin, trophic ulcers, Morvan's disease, syringomyelia, scabies, pediculosis, erythrasma, cheiropompholyx or dysidrosis (characterized by an eruption consisting of vesicles symmetrically distributed on the extremities). Dermatitis repens is a form of spreading dermatitis occasionally following injuries commencing almost exclusively in the upper extremities, probably neurotic in character. Glossy skin is the result of injury to the trunk of a nerve supplying a particular part of the integuments. Localized atrophy of the skin is the result of tropho-neurosis, and presents linear streaks or striæ or maculæ; upon pinching the skin it is felt to be thinner than in other parts. Trophic ulcers are the result of direct injury to nerves or in some cases of reflex irritation. Morvan's disease is characterized by paroxysmal attacks of neuralgic pain followed by the development of bullæ, ulcers and fissures on the palmar surfaces of the hand and fingers. In syringomyelia the skin becomes the seat of various lesions such as glossiness, hyperkeratinization, ex-

cessive secretion of sweat and whitlows. Erythrasma presents brown patches in warm and moist parts (such as axilla, groin).

SURGICAL OPERATIONS ON THE FACE AS A WHOLE. One of the points of importance about the operations on the face is to endeavor to leave as little disfiguring scar as possible.

The operations to be studied here are only those not described in the foregoing description or requiring more minute explanation. The others should be performed as in the other regions.

Operations on the branches of the fifth pair in cases of inveterate neuralgia: Neurotomy, or section of the frontal nerve at the point of emergence at the supra-orbital foramen, of the superior maxillary at the infra-orbital foramen, and of the inferior dental at the mental foramen affords only temporary relief. Neurectomy, or resection of a portion of these nerves, as far they can be traced in the canals and grooves that lodge them, gives more durable relief, but many cases recur. The inferior dental nerve is more thoroughly exposed by trephining through the outer table of the lower maxilla along the course of the inferior dental canal.

Neurectomy or resection of the branches from the *Gasserian ganglion*, or of the ganglion itself, without the motor root, gives more permanent relief than any other course; but it is a very grave operation. In Rose's method the ascending ramus of the lower maxilla is resected, the pterygomaxillary fossa is entered, the petrous bone is trephined at or near the oval foramen, and thus the ganglion is reached. In Hartley's method, or the Krause-Hartley method, a large osteo-cutaneous flap is cut out in the temporal region, the dura mater is raised from the petrous bone, to expose the ganglion, which is removed without injuring the motor root.

Ulcers of the face, when small, should be cocainized and curetted or removed with the *knife*.

One of the most serious difficulties of operating on the face and its cavities is the necessity of often removing the face-

piece through which the anæsthetic is being administered, so as to uncover the field of the operation and enable the operator to proceed; soon after the removal of the face-piece the patient recovers from the anæsthetic, and the operator has to stop to allow the face-piece to be reapplied, and so on during the whole operation. These drawbacks and consequent possible dangers are overcome if, after the patient has been fully anæsthetized by the ordinary method, a tube is passed through the nose into the lower pharynx and the anæsthesia is maintained uninterruptedly by injecting through the tube the vapor only of the anæsthetic; thus a free field is secured. This is accomplished by an *apparatus* invented by the writer; it is so constructed that it can be used with chloroform alone or with ether alone, or with a mixture of the two; it is also provided with an attachment to connect it with a bag of oxygen or nitrous acid gas, if desired. (For detailed description, see *Medical News*, November 23, 1895.)

Surgical Diseases and Injuries of the Nose (Exterior). *Injuries of the Nose. Burns* are grave because of the deformity that follows; it is important to keep the nostrils well dilated with tampons to prevent their closure; it is also important to prevent scratching. Grafting must be applied in time, when necessary.

Freezing of the tip of the nose is frequent in very cold climates; it is announced by a white discoloration; when vesicles appear they denote an unfavorable condition; the nose should be rubbed with snow at once; the reaction should be slow, lest the mortification be rendered inevitable or worse. The nose is sometimes the seat of chilblains (erythema pernio).

Contusions of the nose are common on account of the position and the prominence of the organ; they cause profuse bleeding, pain, and concussion.

Punctured wounds are rare.

Incised wounds need no suture unless the cartilages are involved; it is very important to properly approximate the edges, specially if the nostrils are involved, because a very

small deviation makes an unsightly and ever-noticed scar; should a piece hang or have been cut off, it should be thoroughly cleaned and replaced, without stitches, by plaster and light collodion dressing.

Contused and lacerated wounds require also particular care of the nostrils; if a piece is detached, reapply it, graft in time.

Gunshot-wounds present the same remarks as those of contused and lacerated wounds.

Dislocations of the nose, of the *cartilages,* and of the bones require treatment similar to the fractures.

Fractures of the nose are usually due to severe blows or falls; fractures of the upper part of the nose require very great force. The direction is transverse, with backward displacement, if the blow is from above; it is lateral, if the blow is from the side; in children it sometimes happens that the bones are fractured only in the middle, and are sunken in. The symptoms are those of fractures in general. The diagnosis may require an anæsthetic if there is much swelling, as a corect diagnosis is important before the bones begin to unite, which may begin and go on before the swelling has disappeared. The prognosis is serious, because of the probable and frequent deformity; very often much prominent deformity follows a fracture which at first was thought to be slight. The treatment must be directed toward replacing the bones and preventing deformity; the fragments should be replaced by using external and internal manipulations; internal aseptic tampons must be used with caution, on account of the possible sepsis; apply externally strips of plaster and compresses; in cases where the fragments fall back, they should be raised and supported by passing a pin transversely between the fragments and the sound bone. A complication that is not uncommon is emphysema, if the lachrymal bones have been broken or if the mucous membrane has been lacerated. Very often there is much bleeding, persistent headache, concussion of brain; the latter complication, if grave, may cause death. The dreaded

sequel of fractures of the nose is the deformity; sometimes the nose has to be refractured and readjusted; in some cases osteoplastic operations are required.

Poisoned wounds, stings, bites, present no special remarks here except, of course, glanders, which shows externally first by an inflamed and ulcerated condition of the nostrils and upper lip.

Congenital Malformations. Congenital fissures are more frequent on the back of the nose than anywhere about the face, and yet they are very rare.

Nasal dermoid fistules are always ascending, and may reach the dura mater.

Congenital absence of the nose has been observed positively once by Maisonneuve; it was in a child nine months old; there existed only a flat surface, with two small holes. Langenbeck recommends in these cases the transplantation of the periosteum of the frontal bone.

Occlusion of the nostrils has been noticed.

Congenital clefts and fissures of the nostrils are due to incomplete closure of the branchial fissures of the cheek or of the naso-genial fissures; they are directed usually toward the external angle of the eye; plastic operations are necessary to remedy the defect.

A *bifid double nose*, due to a fissure between the lower lateral cartilages, is recorded by Verneuil, Thomas, Borelli.

Congenital hypertrophy has been observed.

Double noses exist; they are more or less well formed; the remedy consists in removing one and closing the gap by a plastic operation. Sometimes the additional nose is a tumor.

Congenital deviations are more or less frequent, such as parrot-nose, saddle-nose, pug-nose, excessive deviation to the right. A case is reported of the successful removal of a morbid mass implanted on an abnormal bifurcation of the nasal bone, and in which was recognized the rough appearance of a fœtus; at the lower part, between two thighs, was noticed a penis, cavernous and erectile.

Acquired Malformations of the Nose. Destruction of the

nose is frequent enough as a result of injuries, of lupus, rodent ulcers, epithelioma, chancres. To remedy the defect a plastic operation is necessary, or the wearing of an artificial nose supported by spectacles.

Closure of the nostrils follows burns, fractures, smallpox; the nostrils should be dilated gradually, like other strictures; the dilatation has to be kept up, so as to prevent a return of the stricture.

Depression or flattening of the bridge of the nose may be due to fractures or to syphilis.

Rhinoscleroma is peculiar to the nostrils and to the skin around them; it begins by nodules in the cutis which coalesce to form a hard growth with a smooth, glistening surface which spreads inward from the lips, and downward to the pharynx; it is a very rare affection. It should be removed as early as possible.

Scrofulous hypertrophy of the nose is comparatively common.

Elephantiasis affects the nose markedly.

Hypertrophy pure and simple is frequent enough.

Hypertrophy of the lobule is not rare in those cases of acne rosacea, where are found scattered hypertrophic conditions called lipoma nasi.

Expansion or *flattening of the bridge* of the nose, or *frog face* is observed when tumors form inside, polypi, hernia cerebri are growing on the outside.

Acquired deviations of the nose from blows, falls, causing fractures, dislocations of the cartilages or of the bones, are rather common.

Swellings of the nose follow all injuries and inflammatory diseases and cause great deformity.

Neuroses present nothing peculiar, neither *softenings* nor *indurations* which are particularly noticed.

Hyperæmia or congestion of the nose, specially the chronic form, is more frequent here than on any part, even the face itself.

Inflammation of pure and simple form, or *erythema* of nose due to coryza, is frequent.

Acne rosacea always begins by the nose.

Acne hypertrophic is an advanced stage of acne rosacea due to hyperplasia of the tissues producing tubercles and pedunculated small tumors, the *lipoma nasi.*

Acne sebaceous is common also.

Lupus erythematous has a predilection for the nose.

Eczema about the nostrils is often accompanied by coryza of an irritating character, complicated at times by painful boils; the upper lip may suffer in consequence of the nasal discharge trickling over it; the special feature is great redness and swelling of the part of the lip lying below the nostrils, with painful pimples about the orifices of the hair-follicles, and almost unbearable itching; crusts form, and a good deal of thickening of the lip, causing deformity and even obstruction of the nostrils, may be left.

Furuncles are frequent and painful.

Erysipelas often first shows on the tip, coming from the interior of the nasal cavities.

Gangrene of the nose is rare; when it occurs plug the nostrils to prevent strictures; graft in time, perform plastic operation to remedy the deformity.

Raynaud's disease, described in connection with the face, sometimes affects the nose.

Necrosis of the bones is usually syphilitic, and should be treated as in other situations.

Ulcers of Nose. Lupus exedens and *nonexedens* have a predilection for the wings of the nose; also *ulcer rodent* and *epithelioma; scrofulous* and *syphilitic ulcers* are not very common on the nose.

Chancre indurated of the nose is often due to a bite in a scuffle.

Fistulæ due to carious bones are the only ones; they are seldom met with.

Tumors of the Nose. Emphysema has already been mentioned.

Hæmatoma liquid is rare; *angioma* also.

Cystoma sebaceous is frequent, and its dissection is often difficult.

Nasal dermoids have been met with. They are situated on the side or over the centre, in the interbrow region, extending upon the back of the nose and turning down on the end of the nose. They are almost always fistulous cysts. These fistules and cysts have a cranial and not a facial origin, according to Lannelongue. The fistula may lead to a tract always ascendant, which may reach the dura mater. All this because of the medial development of the embryo and of the peculiar development of the nose from the frontal bud.

Lipoma, not the lipoma nasi, but fatty lipoma, is sometimes noticed hanging from the tip of the nose by a pedicle; lipoma of the root of the nose has been observed.

Molluscum sebaceous is also sometimes pedunculated and hangs from the tip.

Gummata syphilitic are rare; gumma of root of the nose is sometimes followed by rebellious ulcerations easily mistaken for epithelioma.

Comedo is frequent; keloid from burns is rare; neuroma, adenoma, fibroma, chondroma, osteoma, syphilitic hypertrophy, carcinoma and sarcoma are all rare.

Sarcoma of the nose is seldom seen except in subjects between the ages of fifteen and twenty.

The *diseases special to the nose*, and not seen anywhere else, are: rhinoscleroma, lupus erythematous, acne rosacea, acne hypertrophic (lipoma nasi). The *diseases that are most frequently met with on the nose* are: naso-genial congenital fissure or fistulæ, bifid nose, deviations, hypertrophy strumous, frog face, seborrhœa oleosa, frost-bite, knock-out blows, glanders, erythema solare, Raynaud's disease, lupus exedens and nonexedens, epithelioma.

Scrofulodermia of the nose is represented by the peculiar hypertrophic nose and the peculiar eczema of the nostrils.

Tuberculodermia is represented particularly by lupus. *Syphilodermia* is represented by nothing more characteristic here than in any other part of the face or body.

Surgical Operations on the Nose. The *ulcers and tumors* of the nose should be treated as those of the face in general.

Grafting should be resorted to early and freely, because losses of substance are even worse on the nose and the wings than anywhere else except the eyelids.

Plastic operations for the repair of partial losses or for the construction of a whole nose are among the most delicate operations in surgery. The operation is called rhinoplasty, and presents the Italian method and the Indian method. The Italian or Tagliacozzian method is named from Tagliacozzi. It cousists in making a pattern which is applied to the skin of the arm; the skin is incised all around it, but one-third more on every side for shrinkage; a pedicle is carefully preserved; the flap is raised, and is allowed to remain so for about fifteen days, when its lower edge is much thicker on the under surface, and presents granulations; then the edges of the stump of the nose are pared, and also the edges of the flap, and the arm is brought in such a position as to allow the ready fitting of the flap to the nose where it is properly stitched; the arm is held in that position by a liquid glass or plaster bandage, or by some special apparatus, until nnion has taken place, when the pedicle is severed and the arm released. The upper lip is used afterward to make the columna.

In the Indian method a pattern is also made and is applied to the skin of the forehead, which is incised in exactly the same manner, but the flap is at once placed in proper position; care should be taken not to wound the angular artery; the gap created by the taking of the flap is closed by sliding autoplasty or by grafting; it is sometimes advisable to raise the periosteum with the flap, or even the outer table of the frontal bone (Koenig). For the minute details of these operations the student is referred to special works.

Surgical Diseases and Injuries of the Lips. *Injuries of the Lips.* *Burns* of the lips by acids (nitric, hydrochloric, sulphuric), when on the cutaneous surface, are usually the result of a criminal attempt; when on the mucous border they are due usually to suicidal tentatives. Burns of all kinds are followed by cicatrices which are very disfiguring; use early and thorough grafting.

Frost-bite does not affect the lips as often as the nose, in spite of their exposed condition.

Freezing or effect of cold on lips is usually a crack in the middle of the lower lip, specially in young and lymphatic subjects; it is sometimes the cause of strumous adenitis.

Contusions of the lip are usually accompanied by a great deal of swelling; the ecchymosis is most often submucous, which is due to the greater softness of the tissues there and to the action of the teeth.

Punctured wounds are rare.

Incised wounds bleed very freely; when perpendicular to the fibres of the orbicular they present great separation of edges, and are followed by a cicatricial notch; when the artery is injured the hemorrhage is profuse, specially if the wound is near the commissure; torsion and suturing stops it usually.

Wounds on the mucous surface bleed more freely because the arteries are nearer the mucous membrane. It is most important to approximate the vermilion border properly; be careful to prevent notching. When the whole lip is divided through it is safer to use a pin suture.

Contused and lacerated wounds are frequent; sometimes the injury inside inflicted by the teeth is great, without any outward sign; they often resemble an incised wound, because the teeth cut through from the deeper surface; it is best to convert lacerated wounds into incised ones by paring the edges, thus preventing ugly cicatrices and keloids; sloughed wounds should be pared and sutured as soon as the granulations are healthy.

Wounds with loss of substance of lips, such as bites by men in a scuffle, by dogs, by horses, are not rare on account of the shape and position of the parts.

Gunshot-wounds offer the same remarks.

Poisoned wounds, stings of bees, of spiders, of insects are accompanied by great pain, swelling, and disfigurement.

Congenital Malformations of the Lips. *Absence* of the lips, or *achelia*, is very rare.

Astonia is absence of the buccal orifice, which is different from the simple atresia due to excess of adhesion of the lips.

Atresia of mouth, when incomplete, is a narrowing of the buccal orifice; when complete it is also called *imperforation;* this differs from astonia in this: that behind the lip there is a buccal cavity. Incomplete atresia is also called *phimosis* of the mouth; sometimes the obliterated mouth is replaced by a congenital genian fissure. Atresia of orifice of mouth, without loss of substance and without adhesion to the jaws, may be called *ankylochelia;* it is usually due to lupus, syphilis, variola; in one case the orifice was completely closed.

Congenital fissures of the lips or *harelips* all start from the lip; they present the following varieties: Of the lip alone, a *prolonged fissure* which extends toward the face or the neck; the prolongation is sometimes a mere continued line looked upon as an intra-uterine cure of harelip. Harelip is *simple* when it involves only the lip; it is *complex* when it affects also the alveolar process or the hard and soft palates. The other varieties are: the *ordinary* or *vulgar harelip—i. e.*, a fissure under the nostril; the *coloboma* or bucco-orbital fissure extends to the wing of the nose; the *median fissure*, the *genian commissure*, and the *median fissure of the lower-lip; commissural fissures* constitute *macrostoma;* there are compound and associated fissures.

Congenital fistulæ of the lower lip are often represented by two small orifices symmetrically situated on each side of the frænum and opening on the free edge of the lip nearer to the mucous surface; sometimes there exists also a hideous ectropion of the lower lip, and also a transverse groove.

Median fissure of the lower lip varies from an inch in width to a regular groove, which may be prolonged as a continuous line as low as the sternum; the lower maxilla may also be involved; also the tongue may be bifid.

Branchial fistulæ of the lips have been observed extending more or less far.

Atrophy of one lip, causing tightness of the lip or of both lips, is not uncommon.

Congenital microstoma, or small mouth, is mostly due to arrest of development of the maxilla. *Macrostoma*, or large mouth or fissure of cheek, is due to the lack of closure of the branchial fissures ; the commissure is extended into the cheeks horizontally, or upward, or downward, on one side or on both sides.

Median fissure of the upper lip is very rare on account of the peculiar development of the middle portion of the upper lip.

Lateral fissures, or *harelips*, are comparatively common ; they will be described separately further on.

Hypertrophy of the lips is not infrequent.

Macrocheilia shows thick, everted lips ; it is a condition of lymphodermia. In the general hypertrophic form all the structures are involved. The upper lip specially is affected; it may involve only the mucous membrane and form a sort of chemosis of the lip ; or it may involve also the glandular layer, and increase the appearance ; or the whole lip may be involved. The lip is covered with a rough, wrinkled mucous membrane, and presents a separate pouch on each side of the median line.

Macrocheilia is a special form of congenital hypertrophy of the lips; it is different from the big lips of the scrofulous, of cretins, of paralytics, of negroes; the cause is unknown ; it is most common on the upper lip, whereas angio-elephantiasis selects the lower lip ; the alveolar border is also affected ; the lips may measure as much as fourteen centimetres in length, eight in height, and three in thickness ; the upper lip is composed of fibrous tissue heard to creak under the knife, with star-like centres lined with endothelium and containing lymphoid cells.

Mucous ectropion, or hypertrophy of the mucous membrane, or exstrophy of the lips, is usually congenital.

Congenital hypertrophy is not uncommon in strumous subjects, specially of the upper lip.

Hirsuties of lips, or hypergrowth of hair, is sometimes observed in females ; the following depilatory is useful: three

parts of prepared chalk to one part of sulphide of calcium; make a paste and apply with a brush; it grows again and the process has to be renewed; the best mode of treatment is electrolysis by means of a fine needle, which is glided along the hair-root to the hair-papilla, which is then destroyed by the current.

Congenital deviations of the lips, in the form of eversion or ectropion, or inversion or entropion, are quite rare without hypertrophy. All these cases of malformations are remedied by incisions, excisions, with or without plastic operations, more or less elaborate.

Acquired Malformations of the Lips. Acquired microstoma, or union of the lips and closure more or less complete of the mouth—*i. e.*, atresia, or no mouth at all—has been observed after burns, injuries, ulcers, removal of tumors.

Atresia with loss of orifice of mouth, with loss of substance and adhesions to the jaws, is called *syncheilia;* it is the rule after cancrum oris. As a result of all these different deformities, there is constant dribbling of the saliva and dropping of the food during alimentation.

Acquired macrostoma, or large mouth, is also the result of similar causes.

Cicatrices around the mouth are observed in children affected with congenital syphilis; they may also present a scarred or fissured aspect at the angle of the lips or cheeks.

Acquired deviations or distortions of the lips may be directed upward, downward, or outward; may affect one side or both; most commonly it is ectropion that is observed, due to cicatrices from burns, injuries, gangrene, ulcers, operations; sometimes the lower lip is thoroughly everted and is attached to the skin of the neck. All these interfere with speech and the proper retention of the saliva.

Acquired ectropion or eversion of the lip may be paralytic, mucous, and cicatricial.

Cicatricial ectropion of the lip is due to the retraction of a cicatrix; the teeth become loose.

Scars of the lips do not grow small with age, but grow

with the body; the conspicuousness of the scars makes them doubly objectionable. It is rare that the lips are smitten independently of the other features of the face.

Swellings are observed after injuries and inflammations; in strumous and leprous conditions.

Chronic swelling of lips, or hypertrophy of lips, is usually due to chronic lymphangitis; the cervical adenitis increases the lymphangitic condition by being an obstacle to the course of the lymph.

Chronic swelling of lower lip is more rare in scrofulous subjects; but in idiots, cretins, paralytics, the lower lip, always pendulous and moistened by the constant running of the saliva, is constantly exposing to the air and cold its mucous ulcerated surface, all of which cause a chronic inflammation. In cases of old rebellious indurated lips the excision of a V-piece is necessary.

The diseases of the bones of the jaw also affect the shape of the mouth, and must be studied therewith.

Neuroses of the Lips. The *labio-glosso-pharyngeal paralysis* will only be recalled here.

Softenings and *indurations* of the lips present no peculiarities.

Hyperæmia or congestion of the lips is rare on the lips alone.

Inflammations, herpes labialis are common.

Eczema of the upper lip is a frequent accompaniment of the eczema of the nostrils.

Eczema of both lips is sometimes observed; it is very painful; the lips swell and discharge; they sometimes become so stiffened under a carapace of crusts that the patient can hardly move his lips without cracking the integument. *Furuncles* and *carbuncles* are comparatively frequent, specially on the upper lip. The swelling usually affects the mucous side, and it is followed by protrusion of the lip, ulceration, and ectropion; they are specially dangerous here on account of the complication of phlebitis of the facial vein, which may extend to the sinuses of the brain. Owing to the peculiar

anatomy of the parts, carbuncles present a diffuse swelling, are hard, of a brawny, dusky color; they spread rapidly; the lips are their site of predilection; they are often followed by simple strumous adenitis (not tuberculous).

Pustule malignant is comparatively frequent on the upper lips; *glanders* also.

Gangrene of the Lips. Cancrum oris is gangrene of the corner of the lips and of the corresponding portion of the cheek; it is a phagedenic sloughing; it involves the whole thickness of the lips; it is observed in ill-nourished and weak children; it is peculiar to childhood; it is often followed by great deformity; the jaws may be drawn down by firm cicatrices; in some cases there is also necrosis of the bones.

Ulcers of the Lips. Ulcers simple are met on the lips; herpetic ulcers also. Deep crusts and fissures, due to cold, are commonly observed in rigorous climates.

Irritable or dyspeptic ulcers, due to stomatitis, are described.

Scrofulous or strumous ulcers, or excoriations, are common.

Tuberculosis of the face-border of lips is found always in a patient with lung tuberculosis; sometimes it is due to direct inoculation, due itself to a wound from a projecting tooth, contact of a pipe-stem, puncture with a fork; it is characterized by an ulcer with a peculiar bottom, granular, edges not prominent, irregular, perpendicular, somewhat serpiginous; around it the mucous membrane is purple, strewn with yellow dots; the surrounding tissues are most usually indurated; the glands may be affected.

Lupus tubercular is rare, specially on the lower lip; it is usually due to the extension of the lupus of the face; lupus of the upper lip has a tendency to invade and destroy the nose; it is often remarkable for the concomitant swelling.

Ulcers syphilitic are comparatively common under the form of chancres, which are more frequent on the lower lip.

Chancres indurated of the lips are the most frequent of the extra-genital chancres, specially in women and children, because of the causes: it is due to direct contact with mucous patches

of the lips by a kiss or by a bite in a scuffle; or by indirect contact with the fingers, pipes, spoons, glass, etc.; it often occupies the mucous surfaces. The forms peculiar to the lips are fissuric chancre, commissured or median, formed by two tubercles growing away from each other; erythematous chancre, dwarf chancres which are mere erosions, and which are not recognized until the secondary symptoms show themselves. The opposite lip may become inoculated with a chancre from the other lip.

Gums of lips may become indurated and resemble a chancre, but they present a depressed centre and no glands.

Labial chancre requires a longer time to cicatrize than the genital chancre; it is said that syphilis thus contracted is more severe than the genital chancre.

Mucous patches are common. When ulcers occupy the corner of the mouth, look for syphilis.

Hereditary syphilis of the lips, early or tardy, has been observed specially on the upper lip; the lesions are those of sclerosis, with hypertrophy and ulcerative gummata; it resembles lupus very much.

Ulcers cancerous take the form of epithelioma, which is the cancer of the lip, specially of the lower lip; it will be described separately. Cancer of the lip is the one which has caused the greatest discussions between cancer, cancroid, epithelioma, and carcinoma.

Carcinoma of the lower lip is common in men; is very rare in women.

Epithelioma of the lower lip will cause death within three to five years (Senn). It is a pavement epithelioma. At a very early stage the centre of the indurated area ulcerates, and from the ulcerated surface the atheromatous contents of the exposed epithelial nests can be squeezed out (Senn). Like all such, it is propagated through the lymphatics in the inter-fibrillar spaces of connective tissue.

Persistent ulcers of lips of any kind should be excised.

Fistulæ of the lips are rare.

Tumor of the Lips. Liquid tumors: Hæmatoma liquid is

rare; *cystoma serous* is rare, but *cystoma mucous*, due to the obliteration of a gland, is not uncommon; it shows then most commonly on the inner surface; it contains a thick, sticky mucus. Few cases of *cysticercus* are reported.

Cystoma salivary of the glandules of the lips is comparable to the grenouillette: it is more common on the lower lip.

Angiomata, or erectile formations, are most commonly congenital; they may affect the skin only, or be subcutaneous, or affect the whole lip; they constitute a serious affection when they are large, owing to the great destruction of tissue required to remove them; they are frequent; the lips are a spot of election. When cured, the fibrous indurations may form an unsightly tumor.

Lymphangioma of the lips is rare; it is always congenital. It is composed of a stroma of firm connective tissue containing elastic fibres. The alveoles are lined by endothelial cells. They contain coagula and a serous fluid containing lymph corpuscles. It forms a diffuse tumor of the upper lip which projects continually beyond the upper lip. It is painless, pale, firm and hard. It is irreducible. If limited it should be removed. If too extensive the size of the lip should be reduced to the desired extent by wedge-shaped excisions, or Lannelongue's sclerogenic method of treatment should be tried. It should be treated early to prevent repeated attacks of inflammation (Senn).

Abscess of the lips is rare.

Syphilitic gums are rare.

Tertiary syphilis of the lips forms sclero-gummous lesions.

Circumscribed gumma of the lips is rare; it is seen more frequently on the upper lip.

Syphiloma diffuse of the lips is more common on the lower lip; in the rapid form, the lip is fissured in two or three days, and the swelling is present; in the slow form the progress is longer; it has a chronic course.

Syphilides sclero-gummous of the lips are due to a variation of the two above forms. It is this form that is easily taken for epithelioma.

Syphiloma of the lips (tertiary), developed in the substance of the lips, is more common on the lower lip.

Filaria of Medina, or filaria labialis, or filaria hominis oris (Leidy), has been observed under the mucous membrane.

Hæmatoma, with clotted blood, is seldom seen on the lips, on account of the matted condition of their structure.

Papilloma, mucous or corneous, has been described ; horny papilloma also.

Cystoma sebaceous is common and presents difficulty in the dissection.

Cystoma dermoid is seen occasionally.

Lipoma is very rare, but is sometimes observed ; it is lobulated, doughy, fissured ; it is not rare on the lower lip; the lining membrane over it is grayish or yellowish ; sometimes it is very vascular, like erectile tumors.

Adenoma has been observed.

Myxoma has been observed; it is very uncommon.

Keloids are rather common on the lips.

Neuroma has not been reported.

Fibroma presents three or four cases on record.

Chondroma is rare.

Myoma is unobserved.

Sarcoma is very rare; sarcoma is not a cancer of the lip.

Scrofulodermia of the lips is represented by the hypertrophied lips and by the excoriations and ulcerations above described.

Tuberculodermia is represented by the ordinary forms of typical tuberculosis seen everywhere else; also by the tuberculosis of the free border, also by the ordinary tuberculous ulcers and the primitive lupus, all described above.

Syphilodermia is represented by the indurated chancre, by the mucous patches, by the tertiary sclero-gummous lesions, by the circumscribed gumma, by the diffuse syphiloma, by the sclero-gummous syphilis of the lips, which are often mistaken for epithelioma.

Diseases Special to, or more Frequent on, the Upper Lip. Harelip is truly the only disease special to the upper lip.

The following are more common there than on the lower lip: hypertrophy of the glandular layer, hirsuties in females, poisoned wounds, furuncles, carbuncles, strumous lip, lupus.

Harelip is a solution in the continuity of the upper lip due to lack of union of the branchial laminæ with the frontal bud which forms the middle of the upper lip. It is, therefore, always on the side of the middle line. Harelip presents the following *forms and varieties:* single harelip, double harelip, when it occurs on both sides at the same time; harelip with small or large fissure or gap; harelip with the projection of the intermediate piece of bone or intermaxillary bone, small or large; harelip complicated with the cleft of the hard palate; harelip complicated with the cleft of the hard and of the soft palate also; harelip with congenital fissure of the cheek; harelip with deficiency or partial atrophy of the ends of the lip; harelip with general malnutrition.

Diseases Special to or more Frequent on the Lower Lip. Middle fissure of the lower lip is the only disease special to the lower lip; it has been observed in connection with clefts of the inferior maxilla and tongue. A case is reported of complete harelip of the lower lip due to a peculiar tumor, cystic in character, containing a supernumerary jaw with the teeth grafted as it were on the middle of the subject's own lower jaw; this condition is called prognatism or prognathy (Lannelongue). Middle fissure should be treated like harelip.

The following *diseases are more commonly observed on the lower lip* than on the upper: deviations due to cicatrices sometimes binding the lower lip to the neck; losses of substance interfere with speech and with the retention of the saliva; epithelioma of the lower lip is frequent; angioma is more frequent on the lower than on the upper lip.

The following *diseases, which are common on the upper lip,* are almost unknown on the lower lip: harelip, hypertrophy of the mucous layer alone, furuncles, carbuncles, strumous swellings.

Epithelioma of the lower lip is a frequent disease in man, but rare in females; it is said to be often due to the irritation

produced by a carious tooth, and most frequently by the contact of a short-stem pipe. Sometimes a chronic fissure resembling an ulcer is the starting point; we must remember that an ordinary ulcer touched by a solid stick of lunar caustic will usually heal rapidly, whereas it has no effect on an epithelioma; sometimes it stimulates the growth.

It presents the following clinical *forms and varieties*, according to the size and character of the ulcer, to the condition of the lymphatic glands, of the skin around, of the age and general condition of the patient, of success or failure of union after operation, of the recurrence of the disease.

1. Epithelioma flat or superficial, presenting scales or a grouping of an inflamed sebaceous outlet; it is the less grave form.

2. Epithelioma indurated or circumscribed, with a well-marked raised edge beyond which the tissues look and feel sound; because of this limitation this variety is the less objectionable.

3. Epithelioma papillary has usually a well-limited edge, and is a subvariety of the above.

4. Epithelioma indurated and diffused, which resembles the condition of chronic inflammation, sometimes begins by separate spots which coalesce; there is no elevation of the diseased part; this is the worst form because it leaves the surgeon always in doubt as to whether he has thoroughly removed all the diseased tissue beyond the microscopically infiltrated or infected parts; it usually runs a more rapid course than the others.

5. Epithelioma small in size is, of course, the most favorable for operation; but it is seldom that patients apply for or consent to treatment at this stage.

6. Epithelioma extensive is the most common form met with; the more extensive the ulceration the more grave the operation and its results; sometimes the ulcer is so extensive as to have invaded the cheeks laterally and the bone posteriorly, so as to render all curative operations useless.

7. Epithelioma with affected glands is the rule. It is im-

portant to make a thorough search for them, for if overlooked the disease is sure to return; if even slightly diseased only, they should be removed.

8. Epithelioma with submaxillary glands affected on one side only is the most commonly met.

9. Epithelioma with glands affected on both sides is of no very uncommon occurrence.

10. Epithelioma with digastric glands affected is a very rare form; even when the whole lip is affected it is rare to find these glands, which receive only the lymphatics from the middle of the lower lip, involved.

11. Epithelioma with involvement of all the three groups of glands.

12. Epithelioma with glands small is a most favorable circumstance, as their removal is easy and safe.

13. Epithelioma with glands adherent to the skin.

14. Epithelioma with glands large, loose, and movable.

15. Epithelioma with glands adherent to the maxilla or to the deeper structures; this condition is most unfortunate, because of the extensive operations often required, and the lack of positive assurance of the extirpation of the whole disease.

16. Epithelioma with glands affected after a limited epithelioma is not so grave.

17. Epithelioma with glands affected after a diffused epithelioma is the worst form.

18. Epithelioma with affected glands ulcerated; the great majority of these are past curative operations.

19. Epithelioma with unyielding surrounding skin is unfavorable, because it may require very extensive dissection and plastic operations to close the gap resulting from the removal of the affection of the lip.

20. Epithelioma with a scaly skin is of ill omen, as such skin may develop another epithelioma.

21. Epithelioma in old people is more serious on account of the usual enfeebled condition of patients.

22. Epithelioma with bad general conditions.

23. Epithelioma with some other disease on the same subject is a much more serious condition, according to the nature of the disease complicating the epithelioma.

24. Epithelioma with failure of primary union leaves a greater or lesser gap with dribbling of the saliva and alteration of the speech, which calls for another operation.

25. Epithelioma recurring in the lip is not so serious.

26. Epithelioma recurring in the glands or their site is bad, because these are connected usually with such important organs that the surgeon's hand is often arrested.

Surgical Operations of the Lips. *Ulcers and tumors* of the lips should be treated as those of the face in general. Sores on lip resisting ordinary treatment should be removed.

The operation peculiar to the upper lip is that for harelip, and that for the lower lip is that for epithelioma.

Harelip should be operated on early, but the health and strength of the child are more important than age. The operation may be performed from the sixth week to the third month; but we must bear in mind that very young children do not stand bleeding well. Early operations are indicated specially in double harelip when the child cannot suck, if he is strong enough. No operation should be performed if there exists any sickness from dentition or other cause. The operation consists in paring the edges freely and bringing them together, and holding them with pins deeply buried and sutures, placing rubber plaster strips or collodion over them. The pins should be removed after sixty hours, but the strips should be continued until the cicatrix is firm. In paring great care should be taken that no notch will remain after the operation. For seventy-two hours after the operation the child should be fed with the spoon and also by enemata; opiates should be given for the pain.

Double harelip may be operated on in one sitting, if not too extensive, or in two sittings. In harelip with projections of the intermaxillary bone, this bone should be pushed in if possible; if not it should be excised. Harelip, with cleft of the hard palate, should be operated early, as it will exert an

approximating effect on the bones and will tend to diminish the fissure. In harelip with congenital fissure of the cheek the fissure should be closed at the same time. Harelip with deficiency or partial atrophy of the sides of the cheek calls for plastic and osteoplastic operations if the condition of the child allows; sometimes there is free bleeding from the artery of the septum; the orifice of the wound should be plugged. Harelip with general malnutrition is grave because the malnutrition is often due to defective condition of the lip, which interferes with proper sucking. Nutritive enemata should be used freely, and the operation performed as soon as the child's condition permits.

The operation peculiar to the lower lip is the *removal of an epithelioma.* It is most important to operate early, before the glands become involved; small or even large epitheliomata without glandular involvement may be cocainized and curetted, or may be destroyed by caustic pastes or nitric acid, according to the rules observed in other regions. For large epitheliomata the knife is preferable. An assistant compresses the inferior labial arteries; with long, curved scissors, or with a knife, the whole diseased parts are trimmed off; the squirting arteries are secured; a strong double silk suture is passed through the upper part of each flap, and an attempt is made to approximate the parts; this manœuvre shows the extent of the loss of substance, and if it is such as to require it, each flap is to be detached from the bone and partly from the cervical fascia in order to bring the edges together without strain. This approximation is best effected with pins and silk, because they resist the contraction of the muscles better than other kinds of sutures, which cut more easily under the involuntary movements of the patient. The mouth is often very much puckered as a consequence of this suturing, but usually the tissues here yield remarkably, and when the patient is seen again in a few weeks, and especially in a few months, it is hard to believe that it is the same patient, whose puckered mouth could hardly admit the tip of a large spoon. Next the glands are removed according to the same rules as in other

regions. Often the sublingual artery is wounded, but is readily secured. As usual the cavity is larger than the feeling of the enlarged gland would have led one to suppose. It is well to paint the operated parts with collodion and iodoform, and apply a proper bandage over them. The patient must be fed with a spoon or through a tube until the parts are united. As soon as the bandage is soiled it must be removed; the pins, sutures, adhesive strips will not be removed until they show signs of looseness, when they must be removed, because they have done all the good they could do, and will, henceforth, act as foreign bodies; however, adhesive strips must be applied so as to support the cicatrix until it is strong enough. Epithelioma infiltrated should be most freely removed quite a distance from all signs of the disease, to the eye or to the touch; in this lies the only chance of success in these cases. In epithelioma very extensive, the flaps must be detached from the bone, and, if necessary, dissected as far back as the angle of the jaw, and as low down as the thyroid cartilage, in order to be able to bring the edges together; the flaps must consist of the skin and platysma, and the line of dissection the layer of connective tissue between the platysma and the cervical fascia; sometimes regular plastic operations must be performed. In epithelioma with glands adherent to the bones, these must be well scraped and even gouged. Epithelioma ulcerated, with also extensive ulcerated adherent glands, should not be subjected to any curative procedures. A palliative operation may be performed, consisting in removing with the knife or curette all the necrotic surfaces of the disease which secrete the offensive ichor. In many cases this is quite a relief to the patient and to all those around; but when such an operation is undertaken, it is important not to be misunderstood by either the patient or his relatives and friends; they must realize that the procedure is simply one of relief, which itself may be only temporary. Epithelioma where union has failed should not be operated on until the tissues are thoroughly cicatrized, because the primary union may fail again. Epithelioma recurring on the lip or in the

glands must be operated on at once; it is the last and only chance.

Cheiloplastic operations, i. e., plastic operations on lips, are performed for restoration of the upper or lower lip, or for the deviations of the angles. They consist in sliding flaps or in transplanting flaps from the neck on the face with a pedicle. The flaps must be muco-cutaneous—that is, formed of skin on one side and mucous membrane on the other. Skin grafting is often of useful assistance in filling up. They are very delicate operations, and must be studied in special books.

Surgical Diseases and Injuries of the Chin. *Injuries of the Chin. Burns* of chin present nothing peculiar: nor does *frost-bite,* except its greater frequency, because of the exposed situation. *Contusions:* blows on the chin are very severe on the brain: a blow from below is almost a sure knock down or knock out in the pugilistic arena. There is nothing peculiar in regard to *wounds,* either punctured, incised, lacerated, or gunshot, that is not covered by the description of the injuries of the face in general; of course, injuries of the maxilla are not considered here.

Suicidal attempts by shooting under the chin seldom kill, because the patient usually throws the head back, whereas the pistol is directed upward; they usually result in the destruction of the lower lip, of the middle of the inferior maxilla.

Poisoned wounds present nothing special to consider.

Congenital Malformations. Absence of chin is a possible malformation due to an arrest in the development of the parts, specially of the bone.

Congenital atrophy of the chin also.

Double chin is observed as a result of an incomplete fusion of the two halves of the face. Accumulations of fat, causing thick folds under the chin, are also called double chin.

Hypertrophied or large prominent chin is most uncommon.

Congenital deviation forward, or galoche chin, is not uncommon.

Deviations to one side or the other are not rare instances.

Hypognathy is a malformation characterized by the implantation of a supernumerary inferior maxilla by its own symphysis on the symphysis of the subject; the implanted maxilla is a real maxilla having the same shape more or less, and containing the dental sacs; sometimes the implantation is bony, or is only soft and loose (myognathes); it may be pedunculated (dermognaths). It is a tumor of unequal density; here bony and hard and there soft and fluctuant; cysts may develop in its interior and cause a very great development. It may grow toward the cheek, the mouth, the neck.

Acquired malformations result here as elsewhere from injuries, inflammations, gangrenes, ulcers, tumors, operations which may destroy the chin, diminish it in size, or increase it in size, or deviate it to one side. In old age the chin becomes more prominent and closer to the nose, specially when the teeth are lost.

Neuroses, softenings, and *indurations* present nothing peculiar here.

Hyperæmia or congestion and *inflammation* of the chin. The chin is not a rare site of chronic eruptions. It is sometimes the site of a *peculiar kind of eczema,* or impetigo, which may be confounded with sycosis in the male. In children this impetigo often leaves small scars which are indelible.

Furuncles, carbuncles of the chin are not very rare, and are doubly painful because of the prominent position of the chin; in *inflammation* of the chin it is the digastric lymphatic glands that are usually affected.

Malignant pustules present nothing peculiar.

Gangrene of the chin is followed by loss of substance which requires early grafting.

Ulcers are like those of the face in general. *Chancre indurated* of chin is mostly due to a barber's wound with a contaminated razor; it is often scabby in that region.

Fistulæ and *tumors* of all kinds are comparatively rare and present nothing special. There exist no diseases special to the chin.

Scrofulodermia, tuberculodermia, and *syphilodermia* present nothing peculiar except what has been mentioned above.

Surgical operations on the chin, including those required by injuries and diseases of the maxilla, present nothing not already explained in the surgery of the face in general.

SURGICAL DISEASES AND INJURIES OF THE CHEEKS. *Injuries of the Cheek. Contusions* are not rare; a square blow on the masseter or the malar is often a knock down and a knock-out blow in pugilistic contests. Contusions of the malar and frontal bones are said to be followed by amaurosis due, not to reflex action, but to injuries (detachments) of the lens, iris, retina, choroid, or to extravasation of blood in the chambers of the eye.

Burns and frost-bite extending to Steno's duct and to the facial nerve are followed by salivary fistula and paralysis of the face.

Punctured wounds present nothing peculiar unless they pierce the facial artery or vein, hence hemorrhage; or Steno's duct, hence a fistula. Large perforating wounds may have a permanent fistulous opening through the cheeks.

Incised wounds often present much hemorrhage, owing to the great vascularity of the face.

Wounds of Steno's duct must be attended with solicitude to prevent a fistula; this is more rare than that of the gland, being protected by the malar bone and zygoma. Incised wounds are more common; the division is usually complete; they are followed by the escape of saliva. If union fails there is a fistula, either mucous or cutaneous; or a salivary tumor between the two divided ends, which fills at meals and empties after by pressure. Obliteration of the canal and atrophy of the gland may follow. Sometimes there is transudation, during meals, of the saliva through the skin. In recent wounds stitch the two ends together. In old wounds introduce catgut in distal end; then press on the parotid to discover the proximal end, and stitch to it the catgut of the peripheral end. The wound should be enlarged, if necessary, and the proximal end carried into the interior of the mouth, and retained there by sutures.

Wounds of the branches of the nerve should also be stitched, if possible; although this wounded branch may be a small one, yet if paralysis should follow its injury, the result may be most serious, specially if it be the branch distributed to the orbicular of the eyelids.

Gunshot wounds present the same remarks with all the aggravating circumstances of loss of substance.

Fractures of the malar or of the zygomatic arch are rare because a very great force is required to produce them; most commonly the arch is broken or depressed. It should be raised by means of a narrow lever. If the fragment be loose and falls back out of place, it should be raised with two or three silver sutures passed under it, and tied over a sterilized, small, aseptic splint placed over the extremities of the fixed bones (Matas).

Poisoned wounds, such as stings of bees, wasps, hornets, spiders, poisoned ivy, are very common, and are accompanied by much swelling.

Congenital Malformations. Congenital branchial fissures, resulting from the lack of union of the branchial arches, are not uncommon; they may be horizontal or angular; they may be vertical when the failure of union is located between the extremities of the branchial laminæ and the frontal bud from which the nose and the middle of the upper lip are developed; they may be unilateral and bilateral.

Congenital fistules have been observed on the cheek exceptionally.

Congenital salivary fistulæ, due to a similar mode of production, are on record.

There is no case of absolute *absence of the cheek.*

Congenital atrophy of the cheek is marked by a considerable sinking of the region; it may be due to a want of development of the bones, the teeth, the ball of fat that exists between the masseter and the buccinator.

Congenital deviations are sometimes observed at birth as a result of the paralysis of the facial nerve due to the pressure of the forceps or to purely structural changes.

Acquired malformations are due to injuries, to inflammation, to gangrene, to ulcers, to fistulæ, to tumors, to operations, to cicatrices. Sometimes there is such adherence of the cheeks to the gums, after internal sloughing, that the patient cannot open the jaws.

Swellings of the cheeks are most commonly caused by a bad tooth; the next most common cause is an abscess of the antrum.

Neuroses, softenings, indurations present no peculiarities.

Hyperæmia and congestion are most frequent on the cheek, often the nose. *Inflammation* causing abscess must be treated with care when calling for incision.

Pustule malignant is common on the cheeks.

Inflammation of Steno's duct is called *sialoductylitis*; it is more rare than that of Wharton's duct. Bristles, fish-bones, straws, tooth-brush hair are the usual causes. It is sometimes due to propagation through the mouth; there is swelling of the gland, abscess, fistula.

Salivary colic is due to calculi or other obstructions to the course of the saliva.

Gangrene of the cheeks presents nothing special that has not been said above.

Chancre indurated of the cheek, over the malar bone, is often due to a bite in a scuffle.

Fistula of the cheeks may be due to a diseased tooth or to a diseased bone.

Fistulæ of Steno's duct are most commonly due to wounds, dental abscess, calculus, ulcers, operations. They are usually situated on the buccinator; the orifice is narrow, and in the centre of a granulation, or in the midst of cicatricial tissue; a viscous fluid is discharged, increasing during mastication, specially during meals. As to diagnosis, lymphatic fistulæ of the region are rare, and do not increase during meals; the liquid coagulates; sulphocyanide of potassium is absent from it.

Fistulæ of the parotid gland are recognized by exploring with probe from the mouth. The treatment consists in cau-

terization of the orifice, its compression to produce occlusion, its suturing. These measures are good if the peripheral end is pervious. If not we must re-establish the course of the saliva toward the mouth by re-establishing the normal canal, which it is difficult to do. Proceed within the mouth; pass a threaded needle through the duct back of the fistula, penetrating and coming out as close together as possible, having the duct in the loop, but leaving the skin out, then tighten. We may create an artificial canal by single puncture or by double puncture; by single puncture and drain when fistula corresponds to the anterior border of the masseter, or when it occupies the region of the masseter; by double puncture through the mouth by passage of a lead or silver thread, which cuts through when the course of the saliva is re-established; then the fistula is pared and closed. We may cause atrophy of the parotid by compression or ligation of Steno's duct behind the fistulous orifice by injection of oil and iodine in the duct.

Scrofulodermia, tuberculodermia, and *syphilodermia* present nothing peculiar not already mentioned above, and on the face in general.

Tumors of the cheeks present the following peculiarities:

Cystoma of Steno's duct has been observed.

Dermoid cysts have been observed near the parotid region, in the depth of the cheek in the course of the infundibuliform fissure.

Angioma of the fatty ball of Bichat is usually well circumscribed, stationary, and may obliterate Steno's duct and be accompanied by parotidean lithiasis; the superficial veins are dilated; they are reducible.

Lipoma of the cheek, *i. e.,* lipoma of the fatty mass of Bichat, usually becomes superficial on the cheek in front of the masseter or malar bone, often under the mucous membrane, where the yellow coloration is sometimes seen; occasionally they ascend under the temporal fascia. Sarcoma of the fatty ball of Bichat has been recorded; it grows backward.

Sarcomatous sanguineous cysts of the cheek have been observed over the masseter.

Diseases Special to the Cheeks. Branchial fissures and fistulæ and salivary fistulæ are the only diseases of the face peculiar to the cheeks. They have already been described.

Salivary fistulæ are not uncommon; they are due to injuries of Steno's duct, to gangrene, to ulcers, or to operations; or to an obstruction of the duct; they are in that case preceded by a swelling which suppurates and leaves a fistulous tract. They are characterized by an opening usually situated lower than the zygomatic arch or the malar bone; they present a red or a blue appearance, are depressed, and recall a necrotic fistulous opening; there is a flow of saliva during mastication, specially at meals. The treatment consists in catheterizing the fistula from the inside of the mouth, or to slit it from the inside after introducing a director from the mouth and suturing the external surface; or by dissecting the duct, introducing it into the mouth and stitching it there; also closing the external surface by suture or plastic operation, or by passing an elastic seton from the inside and tying the ends.

Diseases of the Accessory Parotid. Tumors of the cheek sometimes originate from the accessory parotid gland and from Steno's duct, or from the molar glands. Cysts with a glandular epithelial lining are sorts of grenouillettes of the accessory parotid.

Surgical operations on the cheeks do not differ in any essential point from the description given of the operations on the face in general. We will only recall here that care should be taken of Steno's duct and of the facial nerve and vessels. Tumors should be removed from the interior, if possible, to avoid scars.

Loss of substance, irreparable, of the face is masked by celluloid plates, held by spectacles or wigs, etc., or by prosthetic appliances.

A CONVENIENT METHOD FOR STERILIZING INSTRUMENTS AND CARING FOR THEM AFTERWARD.

By Edwin Walker, M.D.,
Evansville, Ind.

All agree that boiling in water or soda solution is the best way to sterilize instruments, but to do this without injuring them, or the necessity of handling them afterward, is not altogether so simple as it seems.

Most operators, after boiling, place their instruments in trays, either with or without covering them, which necessitates manipulations which are liable to expose them to contamination. If they are boiled in muslin sacks or rolls they must be taken out, or the moisture will soon rust them. Every unnecessary handling is a danger. These dangers are by no means imaginary. I have often noted "lapses" by nurses or assistants in the clinics of our most distinguished surgeons, and not a few of these have been unnecessary handling of instruments after they have been sterilized.

Our method is very simple. First, we have a boiler 14 x 6 x 12 inches deep. In this is a perforated tray with handles extending above the sides of the boiler. The instruments are placed in copper boxes with perforated top and bottom. The latter are made of rolled copper with numerous round perforations. This enables them to drain rapidly when taken out of the water. These boxes are made in three sizes, 2 x 7 inches, 4 x 7 inches, 5 x 12 inches, and one inch deep. The smallest one for knives has a spiral spring inside to keep them from rolling about and striking the sides, thus dulling them.

The advantages of the boxes are several. In the first place, as soon as they are taken out of the boiling water, they drain, and the heat of the instruments rapidly dries them, thus preventing rust or soiling. If the operation is to take place at once, the boxes make excellent trays, and it is not necessary to handle the instruments at all. If they are to be taken to the patient's home, they are wrapped in sterile towels, and are thus protected until used. In operations at patient's home, I prefer to take everything with me sterilized, and not to do it on the premises. It can be more thoroughly done in this way, and you are not compelled to use utensils of doubtful history, nor are you tempted for convenience sake to do something your conscience does not approve. I never immerse instruments in water or other fluid.

This is a very simple thing, but I believe it does add to the effectiveness of our technique.

TWO CASES OF INTESTINAL OBSTRUCTION CAUSED BY MECKEL'S DIVERTICULUM.

By James E. Thompson, M.D.,
Galveston, Texas.

Acute intestinal obstruction resulting from Meckel's diverticulum is so hard to diagnose, and the treatment, if operative procedures can be undertaken early enough, is so brilliantly successful, that I wish to place the following two cases on record in order to increase our knowledge of this subject.

Case I. *Acute strangulation of ileum under a bridge formed by Meckel's diverticulum; symptoms lasting five days; operation; death.*—On February 15, 1897, I was sent for to operate on a young man, aged twenty-nine years, suffering from acute intestinal obstruction. On my arrival there late on Monday evening I found the following state of affairs:

The previous Thursday afternoon, while in robust health, he was suddenly taken with severe griping pain in his belly. This became worse toward evening, when vomiting set in. The pain was not localized at any one spot, but was generalized over the abdomen. The following day he was seen by his physician, who prescribed calomel, which produced no evacuation, but increased the vomiting and pain. Purgatives of calomel and castor-oil and enemata were given repeatedly, but no action of the bowels resulted.

On Sunday the vomited matter became offensive, and the patient's condition grew decidedly worse. The purgatives were discontinued, and by the aid of morphine the patient passed a fairly comfortable night. He vomited repeatedly on Monday, before my arrival, and each time the vomited matter was stercoraceous.

I found on my arrival that the patient was apparently comfortable, but complaining of paroxysms of colic coming on at intervals of ten or fifteen minutes. He complained of constant nausea, but there had been no actual vomiting for an hour before my arrival.

Examination of the abdomen revealed moderate distention, with excessively tight abdominal walls. The abdomen was uniformly tympanitic, the liver dulness was fully two inches higher than normal, and there was slight difficulty in respiration. He complained of slight tenderness in the left flank only. No intestinal loops could be seen on the surface, although they had been evident on the previous Friday. On questioning the physician I found that waves of peristalsis had been very marked, and all seemed to cease at a spot a little below and to the right of the umbilicus. The temperature was 99° F. and the pulse 72.

I made a diagnosis of acute strangulation of the intestines, but the exact nature of the strangulation was in doubt. I advised immediate operation, but consent was given too late to operate that evening, as I was far in the country with no nurse, and all the preparations to make myself. I gave the patient half a grain of morphine, and he passed a fair night, the pain being but slight and vomiting occurring only once. The next morning, the patient being under chloroform, an incision about three inches long was made in the median line, part above and part below the umbilicus. Immensely distended bowels made their appearance at the opening, and were with the greatest difficulty prevented from protruding.

Two fingers were inserted into the abdominal cavity and a careful but futile search made in every direction. At last I was forced to allow the intestines to come out of the cavity; they were received into warm towels, the incision was enlarged downward, and the search renewed. At last I found a piece of small intestine firmly fixed near the right iliac fossa, and on following the loop to its fixation point the examining finger passed under a tight band. Careful traction succeeded in releasing the incarcerated intestine; it was deeply con-

gested, almost black, but still retained its glistening peritoneal surface. It was very distended; but, compared with the enormously distended gut above, it appeared contracted. On retracting the right edge of the abdominal wound the band was exposed to view and was found to be a Meckel's diverticulum, with its free end attached to the base of the mesentery of the part of the ileum from which it sprang. The diverticulum was short, stumpy, bifurcated at its free extremity, about one and one-half inches long, one-quarter inch in diameter, and it arose from the convex border of a portion of the ileum about two feet from the ileo-cæcal valve. From the apex of one of the apical horns a short, thin cord ran to the base of the mesentery (almost over the right common iliac artery).

This cord contained an artery as large as one of the digital arteries which, when ligatured and divided, pulsated forcibly. A ligature was placed on the cord and the diverticulum was quickly amputated at its base, the opening into the ileum being closed by a continuous Lembert suture.

Attention was now given to the intestines. The strangulated loop had rapidly filled with fecal matter and seemed to be quickly recovering its normal color. An attempt was now made to replace the bowels, but it was soon found to be impossible without emptying the contents. An incision was made into a distended coil and as many coils emptied through this as possible. This was then closed up with a Lembert suture and another incision made into another coil. After this the bowels were carefully replaced, but even then a fair amount of pressure was necessary. After completely washing and cleansing the abdominal cavity a glass tube was inserted into the pelvis, the wound closed up, and the patient put to bed. The operation lasted an hour and a half. The shock was tremendous, as was to be expected. The pulse after the operation was 130 and feeble, and the surface of the body cold and clammy. Hot enemata of brandy and water were given, and four successive doses of one-thirtieth grain of strychnine given in two hours. In about two hours he was conscious

and the pulse had fallen to 120, but he complained of intense pain. There was no nausea, and a little whiskey and water were given by the mouth. At 3 P.M. he became a little restless, but quieted under the influence of one-quarter grain of morphine. At 5 P.M. I was suddenly called and found him cold and almost pulseless. Strychnine was given and every means used to make him rally, but he gradually sank, dying the same evening at 9 o'clock.

CASE II. *Strangulated inguinal hernia (left); prolonged taxis; rupture of the gut; diffuse peritonitis; death (rupture at the root of Meckel's diverticulum).*—A. M., colored, aged fifty years, was admitted to the Sealy Hospital on August 10, 1897, complaining of some pain in his belly and with a history of having reduced, on the previous day by his own efforts, a left inguinal hernia of some years' standing. The hernia had been present ten years; had never been entirely reducible, but only gave trouble occasionally, when it increased in size after exertion. He had always been accustomed to partly reduce it, with immediate relief of his symptoms; but on this occasion he had only succeeded after about three hours' hard work, and then the rupture had entirely disappeared. On admission his condition gave no cause for anxiety. Vomiting, which had been a prominent symptom while the hernia was in the scrotum, had ceased; there was only a little pain in the lower left part of the abdomen; the pulse was 85 and the temperature normal.

During the day he seemed to be progressing favorably, no vomiting was noticed, nor did he complain of pain. During the night serious symptoms appeared, and he was found in the morning with the abdomen somewhat swollen and tender, especially on the left side; vomiting spells at intervals of about half an hour, pulse 120, and temperature of 101.2°.

On my arrival he was taken to the operating-room and the hernial sac opened. A discharge of free fetid gas, intestinal contents, and semipurulent fluid followed. The sac was entirely empty and the internal ring free. The incision was prolonged into the groin, and the abdominal wall divided

above Poupart's ligament as far out as the anterior-superior spine. Fecal matter and pus were evacuated in great quantities, and unsuccessful search was made for a perforation among the matted and inflamed intestines. The patient's condition becoming seriously weaker, the abdomen was cleaned out as well as possible and drained through a counter-opening made in the left loin. The patient never rallied, but died the same afternoon at 4 o'clock.

A partial autopsy only was allowed through the operation wound. There was a generalized peritonitis, and the cause of the mischief was discovered in a perforation at the base of Meckel's diverticulum, which sprang from the ileum thirty-nine inches from the ileo-cæcal valve. At the base of the process was a rent about 2 cm. long, opening completely into the alimentary canal. At the apex and along one side were evidences of old peritonitic adhesions which had probably bound it down firmly to the wall of the hernial sac.

To understand thoroughly the various conditions under which the diverticulum may be met with, it will be necessary to review its development and particularly its relations to the omphalo-mesaraic vessels. The true Meckel's diverticulum represents the vitelline duct which extends from the primitive intestinal canal to the umbilical vesicle. In its most perfect form it extends from the lower part of the ileum to the umbilicus ; opening freely into the lumen of the intestine, and, at the navel, being either open and allowing the escape of fecal matter, or completely closed. Its lumen may be obliterated in the greater part of its extent, and then the diverticle exists as a solid cord, extending from the apex of the patent process to the umbilical cicatrix. This is by no means an uncommon condition, and when the solid cord is long and redundant, it may be thrown into loops through which portions of intestine may pass and become strangulated.

Oftener the diverticulum exists as a free tube arising from the ileum, lying in the peritoneal cavity without attachments, in which condition it is harmless, as, unlike the appendix

vermiformis, true inflammatory affections due to retention of contents have been rarely met with. Fitz[1] has only been able to collect three cases of true inflammation around this process —one reported by Beale, where acute perforative peritonitis occurred; another by Houston, where adhesive peritonitis was noticed, and a third by Galton, where a perforation occurred from typhoid fever.

The attachment of the apex of the diverticle to different parts of the abdominal cavity opens up a very interesting subject. Most commonly it is met with attached to the base of the mesentery. Thus, Cazin[2] gives ten mesenteric attachments out of twenty-three cases. Treves[3] gives seven attachments to the mesentery out of nineteen additional cases collected by himself; and Kammerer[4] quotes from the statistics of Boldt and those of Neumann supporting his statement, while from a review of the literature of the subject since 1890 he strengthens the position.[5] Making a complete list from all the reported cases (66), Kammerer finds that the following represent the attachments: 33 to the mesentery; 13 to the umbilicus; 8 to the abdominal walls; 12 to the intesinal tract and other abdominal viscera.

My own two cases increase the list to 68, and give one attachment to the mesentery and one to the abdominal walls.

The preponderating number of attachments to the mesentery deserves some study and suggests something more than mere coincidence. Occasionally, no doubt, the fibrous, cord-like attachment to the umbilicus becomes torn and hangs free in the abdominal cavity until it becomes reattached to some of the contiguous viscera. This explanation will hold good in those cases where the apex is adherent to another coil of intestine or to the orifice of a hernial sac, but where the attachment is to the base of the mesentery it does not represent a secondary adhesion, but is truly embryonic, and results from persistent omphalo-mesaraic vessels.

[1] Fitz: American Journal of the Medical Sciences, July, 1884, p. 52.
[2] Cazin: Études sur les diverticules de l'intestin, Paris, 1862.
[3] Treves: Intestinal Obstruction, p. 34.
[4] Kammerer: Annals of Surgery, August, 1897. [5] Kammerer: loc. cit., p. 185.

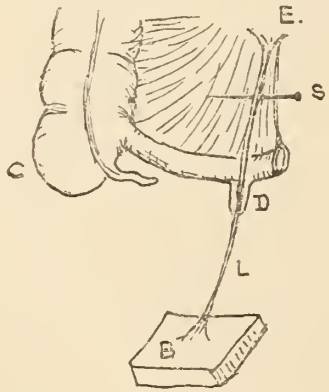
Treves[1] speaks generally of these attachments of the diverticle to places other than the umbilicus as *secondary adhesions*, but points out clearly that these *adhesions* are found more frequently in the mesentery of the ileum between the origin of the process and the cæcum.

Leichtenstern,[2] in discussing this subject, quotes from Falk and gives a diagram which, probably, explains the subject clearly. The explanation is the following: Along the vitelline duct course originally two omphalo-mesaraic arteries. The left one disappears, but the right remains as the superior mesenteric artery of the adult, the terminal branch of which accompanies the diverticle, if one persist, as far as the umbilicus. With the disappearance of the vitelline duct occurs a similar obliteration of the omaphalo-mesaraic artery, but occasionally the duct may disappear and the vessel still remain, coursing across the abdominal cavity from the root of the mesentery to the anterior abdominal wall as a solid cord having no connection with the intestine whatever. Such a case is described by Mahomed,[3] where a fibrous cord was found passing from the root of the mesentery about three feet from the ileo-cæcal valve to the anterior abdominal wall midway between the umbilicus and pubes. At its mesenteric attachment it was found to be continuous with the ileocolic artery, and at its other extremity it divided into two parts, one passing down to the pubes, where it communicated with the superior vesical artery, the other passing to the umbilicus. An attempt to inject it from the branch of the ileocolic artery succeeded to some extent through the mesenteric portion, but the part in the abdomen remained impervious. (The cord had caused the death of the patient by snaring and strangulating a part of the small intestine.)

Meckel[4] describes intact omphalo-mesaraic vessels in the absence of a diverticulum in embryos older than ten weeks. Von Siebold and Schroeder found them very frequently in

[1] Treves: loc. cit., p. 34. [2] Leichtenstern: Ziemssen's Cyclop., vii. p. 535.
[3] Mahomed: Path. Soc. Trans., xxvi. p. 117.
[4] Meckel, Fitz: loc. cit., p. 43.

newborn cats and dogs. Allen explains the retention of these vessels thus : by an adhesion of yolk-sac and allantois an intercommunication is formed between the two sets of vessels, and this leads to the retention of the omphalo-mesaraic vessels long after the cessation of their primitive function. Where the omphalo-mesaraic artery undergoes obliteration from the apex of the diverticulum as far as the umbilicus it may still course alongside the diverticulum from the apex of the process to the base of the mesentery of the portion of intestine from which the diverticle takes its origin. Also, the diverticulum is sometimes provided with a distinct mesentery, and this probably represents a portion of the mesentery proper lifted up by the omphalo-mesaraic artery running in its free edge to the apex of the process. This mesentery in its most perfect form is triangular with the artery in its free edge, and it is quite possible to imagine that it could be penetrated or could atrophy with persistence of the vessel in the free edge, which would then show as a fibrous cord running from the apex of the process.



A glance at the diagram will explain this fully. E represents the root of the mesentery where the omphalo-mesaraic artery emerges from the peritoneum.

E D represent a cord containing the artery, D being on the apex of the diverticulum.

S is a needle placed under the cord, where a loop of the intestine might also pass and become strangulated.

L represents the cord free in the abdominal cavity passing from the apex of the diverticle, D, to the umbilicus, B.

Leichtenstern makes mention of certain congenital ligaments starting from the mesentery very close to the intestine at the usual height where diverticles are given off, and running upward toward the root of the mesentery to which they become attached. The ligaments are never hollow, but represent the obliterated vaso-omphalo-mesaraica passing between the root of the mesentery and the intestine. This condition Falk has shown may remain until late periods of life.

In Case I. the process E D remained intact, and, curiously enough, retained its artery with the lumen unobliterated, along which blood passed to the apex of the diverticulum. That the artery represented the omphalo-mesaraic it is impossible to affirm with absolute certainty, because we had no chance of tracing its connection with the termination of the superior mesenteric trunk; but the cord in which it ran was entirely unlike any adventitious cord such as is met with in adhesive peritonitis, for it was smooth and covered with a shining peritoneal layer. Also, its union with the posterior parietes was smooth and showed neither projection nor evidences of inflammation. From these facts I am convinced it was a fœtal remain which could only have had the origin ascribed to it above. Specimens in the Warren Museum, described by Fitz (p. 50), coincide absolutely with my own case. In both cases a dissection revealed branches of the mesenteric artery passing along the fibrous connection between the base of the mesentery and the apex of the diverticulum. An abstract of these cases will be instructive.

Specimen 496, improvement collection, Warren Museum: Strangulation of intestine by means of a diverticulum. Process three and one-half inches long, arising from convex border of ileum. The end of the diverticulum shows no evidence of pre-existing peritonitis, but it continued directly to the upper surface of the mesentery by means of a gradually

tapering cord one inch in length, varying in width from a quarter to an eighth of an inch. A branch of the mesenteric artery was dissected out and traced to the root of the mesentery into the tapering cord, where it passed to the diverticulum. Its patency was demonstrated by the introduction of a fine probe.

Specimen 4831 of the Museum collection: Diverticulum four inches long, arising from the ileum three feet from the ileo-cæcal valve, adherent at its blind extremity to the mesentery. The diverticulum arises from near the mesenteric attachment of the gut. Its distal end is dilated to the size of an English walnut, and is intimately connected to the mesentery without evidences of peritonitis. The mesenteric peritoneum is apparently continued directly over the diverticulum, at the distal end of which a considerable quantity of subperitoneal fat is present. The mesenteric artery can be followed downward from near the root of the mesentery toward the attachment of the diverticulum. A branch of this was followed directly into the subperitoneal fat of the diverticulum, where it became too small to trace further.

Case II. is, as far as I have been able to make out, quite unique.

Meckel's diverticulum has been found in the sac of a hernia many times. Thus Littré[1] in the year 1700 found a diverticle four inches long in the sac of a scrotal hernia of a man aged forty-eight years. And Cazin described a diverticulum in a case of scrotal hernia dissected by himself. Also, Tiedemann[2] found a diverticle in an umbilical hernia in a fœtus at term; and Ludwig and Tilling have published a similar case. In the *Lancet*, 1896, vol. i. p. 424, Mitchel Banks mentions having removed a diverticulum from the sac of a hernia which also contained small intestine. There can be no doubt in our case that the hernia was irreducible for some years, and was only reduced on the day before admission to hospital after prolonged exertion on the part of the patient, and the

[1] Littré, Treves: loc. cit., p. 37.
[2] Tiedemann, Duplay and Reclus: Traité de Chirurgie, vol. vi. p. 768.

cause of irreducibility was probably due to adhesion of the diverticle to the wall of the sac. The diverticle is absolutely free from the suspicion of a terminal cord, but shows near its apex evidences of old adhesions. These are not analogous to those attaching the diverticle to the root of the mesentery, but are truly secondary, resulting from adhesive peritonitis.

SURGERY OF THE GALL-BLADDER AND DUCTS.

By J. McFadden Gaston, M.D.,
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The recent improvements in surgical procedures connected with the gall-bladder are among the most notable advances in the operative measures adopted of late for abdominal troubles.

Anatomical Relations. That system of ducts which connects the liver with the gall-bladder and alimentary canal performs such important functions in health as to render a knowledge of them essential for a proper comprehension of the disorders incident to their temporary arrest or permanent occlusion.

A division of these conduits into the biliary tubules, the hepatic, cystic, and common ducts, is generally recognized, and any interruption in their discharge of bile demands correction.

The first named collect the bile from the acini in the respective lobes of the liver, and convey it through two channels which are included with the hepatic arteries and portal sinuses by the capsule of Glisson in the transverse fissure. These branches are united to form the hepatic duct, which meets the cystic duct at an inclination varying slightly from a right angle, and they coalesce in the common bile duct, which enters by an oblique opening into the duodenum about two inches from the pyloric orifice of the stomach.

The gall-bladder, being a temporary reservoir, is a pear-shaped sac about three inches in length, which is attached to the under surface of the right lobe of the liver, with its glob-

ular fundus corresponding to the anterior margin of that organ, and its neck directed obliquely backward, terminating in the cystic duct.

While this serves as a diverticulum of the hepatic secretion, a portion of this fluid is conveyed directly through the ductus communis into the duodenum. The passage of the chyme over the papilla at its outlet serves as a stimulus for the discharge of the bile accumulated in the gall-bladder, so that this becomes mingled with the alimentary mass in the jejunum.

Physiological Properties of Bile. In the normal state bile is not found in the stomach, and any regurgitation of it into that organ interferes with digestion, but when commingled with the pancreatic secretion in the duodenum a salutary influence is exerted in the assimilation of the fluid.

Notwithstanding the elaborate investigations upon the functions of the liver and the *rôle* of the bile in the digestive processes, there is still great discrepancy in the opinions of physiologists and clinical observers as to the office of this product in the intestinal canal.

The painstaking experiments of Legg as to the province of the bile in the process of digestion led him to the conclusion that "the only office which remains to it is that of emulsifying fats and of changing starch into sugar." But this inference from experimentation is neutralized to a great extent by the weight of clinical experience in regard to its important agency in intestinal digestion.

Clinical Observations on Intestinal Digestion. The study of biliary derangements by observing clinical phenomena contributes more to a proper interpretation of the surgical pathology of the gall-bladder and ducts than the inferences from physiological experiments have done, and it is incumbent upon the investigator duly to weigh not only the effects of retention and diffusion of biliary elements, but the grave consequences of the entire loss of the bile to the physical organization.

Harley says that "the uses of the bile cannot altogether

be dispensed with, for animals with a biliary fistula invariably lose flesh, become emaciated and weak. The hair falls off, the bowels become irregular, while at the same time a great and almost constant discharge of foul-smelling gases takes place from the intestinal canal. At length, after a shorter or longer period, the animal sinks and dies."

In the eminently practical work on the liver by Dr. James Johnson[1] many important modifications of the system connected with derangements of the hepatic function are delineated in graphic terms, while it is held that "the consequences of the want of bile in the alimentary canal are truly momentous."

The able treatise of Murchison sets forth prominently the effects of disorderd secretion of the liver and the serious results upon the general health of any interruption in the supply of bile to the intestinal tract. Bartholow, in his profound essay upon *Diseases of the Liver*, insists upon the importance of bile in nutrition, and the marked influence on nutrition of the absence of bile from the process of digestion in the intesine, while he points out the manner in which this diversion of the bile interferes in the digestion of certain substances.

It is shown by Johnston, in his concise paper for Pepper's *System of Medicine*, that intestinal digestion begins when the softned mass passes through the pylorus. When the alkaline bile is mingled with the acid mass in the duodenum it neutralizes its acidity, precipitates the peptones, and, therefore, stops all further action of the gastric juice. Fats containing free fatty acids are emulsified, soaps being formed by a combination of the alkalies of the bile with the fatty acids. Lastly, bile hinders fermentation in the intestine and acts as a purgative by exciting peristalsis.

Pathological Indications from Obstruction. With such evidence of the properties of the bile, and of the consequences attending its absence from the alimentary canal, the

[1] A Treatise on Derangement of the Liver, Internal Organs, and Nervous System; Pathological and Therapeutical, 1826.

disorders which accompany its arrest in the ducts may be readily comprehended. Obstruction of the common bile duct effectually excludes it from performing its appropriate office in the digestion and assimilation of the food, and there can be no assurance of relief without resorting to operative measures. It is not improbable, however, that in some cases of temporary stoppage of the duct, either from concretions or hardened mucus, there may be a dislodgement of the obstruction with an evacuation of the contents of the sac. Again, there may exist inflammation of the tissues of the duct without adhesion of its walls, and the swelling and turgescence may disappear, so that the canal shall be restored to its normal state, and serve to convey the bile to its proper destination in the duodenum.

Operative Procedures Requisite. Should these results not come about with medical treatment, it becomes necessary to evacuate the distended gall-bladder by an operation with a view to establish either an external outlet or by catheterization of the tract from the sac into the duodenal canal. The subsidence of the inflammation may thus restore the natural discharge, and under such favorable conditions the external opening may be closed, obviating a fistulous outlet. This fortunate result, in securing against the waste of bile, relieves this process of a most serious objection as a radical operation. It is requisite for the successful issue of any operation that a communication with the alimentary canal shall be established, and the temporary discharge of bile by an external opening, with a view to subsequent restoration of its natural channel and ultimate closure of the fistulous outlet, is not liable to the grave consequences of a permanent waste of the biliary secretion.

When the common bile duct remains impermeable an artificial connection of the gall-bladder with the the duodenum has been proposed as a feasible recourse for returning the bile to its appropriate destination in the alimentary canal. The claim of this cholecysto-duodenal communication to consideration rests chiefly upon the great importance of the bile in

the digestion and assimilation during the passage of the food through the upper portion of the small intestine. The entire removal of the gall-bladder in cases of atrophy or degeneration of its tissues has been resorted to without serious interference with the biliary function, except that the bile flows directly through the common duct into the duodenum instead of having a portion reserved in the storehouse by the wayside for future use.

Continuous Flow of Bile into the Duodenum. There is, of course, a departure from the normal state in the delivery of bile continuously into the duodenal canal, instead of the physiological proceeding of retention for certain periods in the sac, and then being poured out as requisite for intestinal digestion. Yet it is inferred that, under the change of relations in the bile-producing act, the discharge adapts itself to the natural demand for it, and experiments have proven that the ductus communis becomes endowed with a retentive power by the spontaneous constriction of its outlet for certain periods in the intervals of digestion. The continuous discharge of bile by a direct outlet from the gall-bladder into the duodenum, when the common duct is entirely occluded, certainly fulfils the ends of its production more satisfactorily than the formation of a cutaneous fistula for its escape externally, by which its influence upon the system is completely lost. At least, this is the nearest approach to a normal supply of the biliary secretion which can be provided under the circumstances, and thus relieves all the embarrassments of the situation.

Early Exploratory Operation. In the masterly review of abdominal surgery by Senn before the American Medical Association at St. Louis it is stated that recently the gall-bladder has been made a favorite object of operative treatment. "It requires no argument to show that surgical treatment should not be resorted to as an *ultimum refugium;* but to secure a good result the operation when required should be done before the patient's strength is too much reduced. An early operation is the more justifiable, as statistics have

shown that operations upon the gall-bladder are among the safest and most satisfactory within the domain of abdominal surgery. As in other abdominal operations, the results obtained by Mr. Tait in the surgical treatment of diseases of the gall-bladder stand unsurpassed and pre-eminent." It is also held by Senn that, in view of the comparative safety of an exploratory operation, this should be preferred to the more doubtful expedients of exploratory puncture and sounding of the gall-bladder in all cases when a positive diagnosis cannot be made without resorting to these diagnostic measures.

Previous Publications. My investigations in regard to the surgical relations of the gall-bladder to obstruction of the ducts have appeared in the *Atlanta Medical and Surgical Journal* for August and October, 1884, and for September and November, 1885; in the *Southern Medical Record*, of Atlanta, for March, 1885; in the *Medical and Surgical Reporter* for September, 1885; and in the *Proceedings of the Medical Association of Georgia for* 1886. But my most elaborate papers have been published in *Gaillard's Medical Journal* for October, 1884, under the title of "Obstruction of the Gall-duct and its Bad Consequences, with Remedial Operation Suggested," and in the second volume of the *Reference Handbook of the Medical Sciences*, with the captions of "Cholecystectomy, Cholecystotomy, and Duodeno-cholecystostomy."

Those interested in the surgical treatment of the disorders of the gall-bladder and ducts are referred to the above publications for important data, which cannot be presented in this paper, while the last-named articles furnish the basis for the operative measures herein presented.

Classification of Operations. In the consideration of different methods of operating on the gall-bladder, it is preferable to commence with that of most gravity, and then proceed to others of less seriousness, under the following classification:

Cholecystectomy, or excision of the gall-bladder.

Cholecystotomy, with or without the formation of an external biliary fistula.

Duodeno-cholecystostomy, or the formation of a direct communication between the gall-bladder and duodenum.

Cholecystectomy indicates the excision of the walls of the gall-bladder, or the extirpation of this sac, with ligation of the cystic duct. The peculiar arrangement of the several ducts by which the bile is conveyed from the secretory apparatus of the liver into the gall-bladder, and thence discharged as occasion may require, may be supplemented by its direct passage. In the event, therefore, of complete occlusion of the cystic duct, while there is no restriction of the direct passage, it becomes utilized without this diversion of the bile into the gall-bladder.

Atrophy and Absence of Gall-bladder. The cases of congenital absence of the gall-bladder and those in which it has become atrophied after having ceased to perform its functions, while the hepatic and common ducts maintain the communication of the liver with the duodenum, do not manifest any serious inconvenience from the lack of this relay station as a diverticulum for the bile. In the few instances of congenital absence of this sac, the hepatic and common ducts have been found to exceed the normal calibre, and the liver was less than the natural size; whereas this organ is enlarged when the deficiency is accidental or acquired by disease. Doubtless the same chronic enlargement of the liver will be found to follow extirpation of the gall-bladder. Instead of the diversion afforded by this reservoir, admitting of periodic discharges of bile, it must flow continuously from the hepatic duct into the ductus communis choledochus. But the valvular construction of its entrance into the duodenum must cause some delay in the exit of the bile, and this partial arrest at the outlet leads to a modified regurgitation, which tends to produce engorgement of the glandular structure of the liver, and consequent hypertrophy of this organ. (Ziegler's *Pathological Anatomy*, p. 325.)

When the common duct becomes partially or entirely obstructed at its outlet, while the hepatic and cystic ducts are open, there is an accumulation of bile in the gall-bladder.

This may lead to a greater or less dilatation of its walls, with inspissation of the fluid contents or a deposition of concretions. Yet there is generally a marked diminution of the secretion of bile following the arrest of its discharge into the duodenum, and eventually the liver ceases to yield any secretion, so that a stasis exists in the bile-producing process.

It is a well-ascertained consequence of an occlusion of the cystic duct for any considerable period, that various abnormal collections in its cavity ensue, such as glairy mucus, pus, or sero-purulent exudations. The presence of gall-stones in the ducts, or intermixed with the accumulation in the sac, may complicate such cases, and the simple evacuation of the contents does not ordinarily afford permanent relief. The prime question for consideration is the practicability of adopting any measure of treatment which shall restore the function of the liver and preserve the office of the gall-bladder. In case the derangement should prove to be irremediable, excision of the gall-bladder is indicated. Under such conditions the attention of the surgeon may be appropriately directed to the radical operation of cholecystectomy, as first practised by Von Langenbuch, and since by other European surgeons.

Modifications of Langenbuch's Operation. If it should appear that Langenbuch has not sufficiently restricted the indications for removal of the gall-bladder and ligation of the cystic duct, this affords no proper objection in extreme cases which may demand this operation. Some modifications of the process adopted by Langenbuch may, perhaps, be attended with advantage, such as suggested by the steps of Sims and Gross in excising portions of the sac, so as to lessen the material to be restored by shrinkage in cases of the extensive dilatation of the gall-bladder. The removal of a great part of such a dilated sac, leaving the better vitalized structure adjoining the hepatic attachment to be closed by a linear suture, or to be secured to the opening in the parietes of the abdomen, might be proper when the cystic duct is found patulous.

The dissection of the adherent layers of the sac from the

under surface of the liver does not seem to be called for in excision of the gall-bladder. In one of my canine experiments the outer wall of the sac underwent disintegration, while the adherent tissue was still firmly united to the under surface of the liver. Since the separation of this layer from the proper structure of the liver gives more trouble than any other step in the operation, it may be left attached after trimming off all the loose wall of the gall-bladder, and thus materially simplify the surgical procedure in cholecystectomy.

Langenbuch states, in his reprint from the *Berlin. klin. Wochenschrift,* kindly forwarded to me, that chronic cholelithiasis induced him in five cases to extirpate the entire gall-bladder. The first patient, operated upon July 15, 1882, and also the second and fifth were living and permanently relieved. The third case, operated upon in 1883, was nearly cured, when about three weeks later the patient suddenly died from a cerebral tubercle, of the size of a hazelnut, in the plexus choroides. In the fourth case, operated upon early in 1884, ulcerative perforation at the junction of the cystic with the hepatic duct led to a flow of bile into the peritoneum, which caused the death of the patient within a few days after the operation. "Hence," he remarks, "none of my patients died of the operation or its consequences; and Lawson Tait certainly did not peruse my own publications when he asserted that in six cases operated upon by my method, three terminated fatally."

Description of Case and Operation by Langenbuch. "On the contrary, my experience gained in the first four cases has lately been improved upon by a fifth operation attended with complete success. It was on the person of a gentleman over fifty years of age, who for more than thirty years had suffered with the most pronounced symptoms of gall-stone cólic. The paroxysms returned year after year with increased severity and baffled all treatment. The patient at such times became desperate, and repeatedly tried to commit suicide. He heard of the possibility of a permanent cure by a radical operation, and asked me to examine his case. There

was no doubt in regard to the diagnosis, as the frequent and painful passage of gall-stones through the intestines, and their presence in the stools, with sensitiveness to pressure in the region of the enlarged gall-bladder, clearly verified. The patient was anxious to be freed from his trouble, and urged me to perform the operation at once; but owing to the frequent paroxysms of colic, and a slight indication of jaundice, I thought it advisable to desist for the time from operating. After a few weeks had passed without any passage of gall-stones, and also the jaundice had disappeared, I concluded not to resist further the importunities of the patient, and to make an exploratory incision, with a view to be guided afterward by circumstances.

"On September 5, 1884, the operation took place. The attending physician, Dr. Thiriar, and Professors Sacré and Heyer, all of Brussels, had the kindness to assist me, while Dr. Löhlein, of the Lazarus Hospital, attended to the after-treatment of the case. The first incision, from twelve to fifteen centimetres in length, was made along the outer border of the right rectus abdominis muscle, tending downward from the arch of the ribs; the second, about ten centimetres long, ran parallel with the arch of the ribs toward the ensiform cartilage. The gall-bladder was filled with stones, and had an attachment, the size of a dollar, to the interior surface of the abdomen, while on the other side it was attached throughout to the colon. Under such circumstances, it was very tempting to simply slit the sac and thoroughly examine it, with the evacuation of its contents. But after mature deliberation, I determined to bring about a definite and permanent cure.

"I thought it important to inform myself as to the condition of the gall-ducts, and more particularly to learn whether there were stones in the cystic or common ducts. The latter might exist without necessarily causing jaundice, since it is a known fact that impacted stones will permit the flow of bile for a more or less limited time. Had there been a large concretion near the outlet of the ductus choledochus, indicating

the stagnation of the bile, we certainly would have erred by providing for a gall-fistula, as in so doing we would have removed the *vis a tergo* toward the common duct, the bile flowing unrestricted through the fistula. It is probable that the ductus choledochus, through disease, would then have contracted, and finally have embraced the stone so tightly that serious inflammation would have been the result. The outcome would then have been a definite occlusion of the duct and a permanent fistula, two circumstances not promoting the comfort of the patient. I therefore proceeded with the somewhat difficult and tedious task of detaching the gall-bladder, in which I was finally successful. The ducts were brought within reach of my fingers, almost up to the diverticulum Vateri, by separating the peritoneal connections of the colon, and dividing the retroperitoneal relations of the duodenum.

"I could now easily ascertain that there were no stones in the common or in the hepatic ducts, but found some concretions in the cystic duct. The gall-bladder was much enlarged, and was crowded with stones of various sizes. Although it seemed easy to push back the stones from the cystic duct into the sac, it was undoubtedly preferable to remove the diseased product with the source of its formation. To accomplish this, I detached the bladder from the liver, where, in consequence of its chronic inflammatory condition, it had closely adhered; and after being satisfied that no concretions had been left within any of the ducts, I ligated the cystic duct with a strong silk thread. After removing the gall-bladder, I secured the parts with several additional catgut sutures, tending to firmly unite the surroundings of the duct. This being done, the abdominal incision was closed, and convalescence progressed without noteworthy interruption, so that the sutures were removed on the tenth day. A few days later, the patient had an attack of pneumonia, from which, however, he soon recovered, and later reports confirm his complete cure."

Advantages of Extirpation of the Gall-bladder. Langenbuch claims that with the excision of the entire dis-

eased bladder, we exclude a possibility of the recurrence of trouble, with less dangerous interference, avoiding the risk invariably connected with attaching the gall-bladder with the abdominal wound; accomplishing at the same time, without the formation of a fistula, a definite union of the external wound, leaving the secretive pressure of the gall intact, and effectually and permanently accomplishing a cure. He holds that the dangers connected with the opening of the abdominal cavity are common to both methods, since in either case the incision has to be sufficiently large to enable the finger to ascertain whether there are stones in any of the larger ducts.

There is doubtless a tendency on the part of the advocates for different operations to undervalue the final cause in the respective cases. Excision or extirpation of the gall-bladder is not expected to supply the place of other processes for correcting its disorders, but is a *dernier ressort* in view of the inadequacy of any means for restoring the functions of this organ and for rehabilitation of the surrounding structures.

Diseased Gall-bladder Regarded as a Cyst. When the gall-bladder and cystic duct become obnoxious to the adjacent tissues, so as to cause local disorder and general deraugement of health, it is the legitimate province of surgery to get rid of them forthwith by extirpation. They no longer subserve the ends for which they are provided, and constitute an abnormality in the animal economy. Their removal is, therefore, rational and philosophic, in like manner as the separation of any other offending member from adjacent structures. This principle is generally adopted for the obliteration of cysts, and when degeneration of structure with decomposition of the contents of the sac is found in connection with occlusion of the gall-bladder it belongs properly to the category of cysts, as it has no longer any of the capacities of a receptacle of the bile. Instead of retaining an offending member to propagate trouble to other parts, it is the dictate of common sense and sound judgment to sever its connection with the body.

This operation is not warranted in cases of temporary

obstruction of the cystic duct, which admits of relief by mechanical or other means, excepting when disorganization of the structure of the sac is imminent. In permanent obliteration of the cystic duct, though the structure of the gall-bladder, up to the time of an exploratory operation, be intact, it is reasonable to infer that degeneration will ensue, so that it becomes a legitimate proceeding to excise it.

In the paper of Thiriar, presented to the French Congress, it is stated that extirpation of the gall-bladder was proposed by Herlin and Champaignac, but had not been performed on a human subject, when Langenbuch, of Berlin, first operated on a patient with biliary calculus by this process.

Eleven Cases of Cholecystectomy. My table of cholecystectomies in the *Reference Handbook* gives five operations by Langenbuch, with one death; a successful case by Courvoisier, and two also by Thiriar. Three other operations have been done by Heyerman, Reidet, and Kronlein, with a decidedly favorable result in the last named. Dr. E. Köhl, of Zurich (in the *Correspondenzbl. für Schw. Aerzte*, 1886, No. 8, p. 193) describes it as a case of dropsy of the gall-bladder in a woman thirty-four years old, who was up and about at the end of the third week, and left the hospital on the forty-first day. When seen later, she weighed five and one-half kilogrammes more than before the operation.

A prerequisite for differentiating the conditions warranting extirpation of the gall-bladder from those derangements in which other modes of correction are available, is a thorough comprehension of the normal function of the gall-bladder, with a minute examination of all the consequences of obstruction of the ducts and the feasibility of the various measures of relief which have been proposed or put into execution on the human subject.

An incision of the linea alba between the ensiform cartilage and umbilicus, of sufficient length for convenient manipulation, or over the line of the tumor beneath the arch of the ribs, will expose the diseased gall-bladder, whether it be distended or not. If there is a fluid of any kind accumulated

in its cavity, this should be let out by puncture with a trocar, and then incision of the sac, as near the margin of the liver as practicable, will admit of the removal of any solid contents, with an exploration of the cystic duct. Excision of the walls of the gall-bladder, or a careful dissection of its attachment to the liver, with ligation of the cystic duct if permeable, and the subsequent closure of the external wound by suture, completes one of the most rational and effective proceedings in surgery. We must be guided in our decision of its merits by the judgment of those whose practical acquaintance with the details of the operation entitles them to recognition as authorities in the matter, and it should not be condemned without a thorough investigation of the grounds upon which it is undertaken. Criticism of this operation from any other stand-point than that herein presented is short-sighted and unwarrantable, since the facts must be accepted in their true significance as the basis of forming a correct judgment. The legitimate fruits of an impartial consideration of the cases of extirpation of the gall-bladder, which are now brought to light, must soon be apparent with the advances of surgery. It is clearly shown that the gall-bladder is not indispensable to the regular performance of digestion, and it is not infrequently found completely occluded and atrophied, while the bile is conveyed directly into the duodenum, so that Thiriar regards cholecystectomy as the least dangerous of all the operations.

Cholecystotomy. Under this designation are included such operative measures for the relief of disorders of the gall-bladder as may be undertaken without excision of its tissues, independent of puncturing or incising the sac through the walls of the abdomen, for the discharge of fluid collections. Hepatic abscess originating in the organ, or resulting from dysentery, does not fall within the scope of this paper, yet when biliary channels become affected from obstructions, with the presence of inspissated bile or concretions in the gall-bladder, a consequential abscess may form in the liver that calls for consideration. Ziegler states that the irritant

will first affect the walls of the ducts and their surroundings, and set up inflammation there. Stones formed in the gall-bladder and in the ducts themselves are frequently discharged into the intestine through the common duct.

But if one of them lodges or lingers in the duct, retention of the bile ensues; and this may give rise to dilatation of the ducts and to infiltration of the liver with bile. The liver-tissue may thereupon become degenerate or inflamed, while the parts around the impacted stone become also inflamed or even ulcerated. When such an inflammation of the ducts persists for a long time, or leads to a persistent retention of the bile, the inflammatory changes extend to other parts of the liver. Brown or yellow granular biliary concretions appear in the interlobular tissue and within the lobules. The liver-cells perish at various points, and inflammatory infiltrations appear within the lobules and terminate in abscess or fibroid induration. Independent of this record of pathological changes connected with biliary derangement, it has been noted by other trustworthy observers that the closure of the natural outlet of the bile brings many troubles in its train. Most frequently the progress of dilatation in the gall-bladder, with the consequent suppuration and disorganization in the surrounding structures, indicates the serious nature of the disorder in these cases.

Biliary Fistula. While spontaneous perforations do not pertain to this surgical procedure, it is not out of place to refer to an interesting report upon affections of the gall-bladder tending to result in cutaneous biliary fistula, for which I am indebted to Kemper, in a reprint from the *Transactions of the Indiana State Medical Society for* 1879. Eleven cases of the external discharge of accumulations in the gall-bladder are recorded from various sources with many instructive details. Of these, eight were females and three males, thus showing a much greater proclivity to affections of the gall-bladder on the part of women than of men. The age of the youngest patient was forty-one years, and of the oldest sixty-nine, being thus limited to the middle or advanced

periods of life. Pain in the right side, and a hard, ill-defined tumor in the right hypochondriac or iliac regions, with abscesses within the abdomen near the umbilicus, or in the right groin, were the most frequent accompaniments or consequences of the disorder of the gall-bladder. The duration of the discharge in two cases was only two months; in one a discharge occurred at intervals of four years; in one it continued for six years, when the expulsion of a second stone gave relief; and in one case a fluid discharge was kept up for fourteen years.

The aim of surgical interference is to arrest the march of the disorder and to accomplish a cure. Without indorsing the conclusions of Boeckel in a paper presented to the French Surgical Congress at Paris, it may be stated that in his view cholecystotomy is influenced very much in its gravity by the presence or absence of biliary fistulæ. His statement that the existence of a fistula due to calculi calls for an operation should be qualified, as most assuredly this condition would not warrant the proceedings instituted ordinarily for the relief of cases without adhesions. When early intervention in cases of fistula hastens the cure by preventing the consequences of incessant loss of the bile, as alleged in his paper, it can only be by removal of gall-stones, which impede the flow of bile from the natural outlet, and this operation of detaching impacted calculi is not so simple as represented, with adhesions of the gall-bladder to the parietes of the abdomen, as these preclude the requisite manipulations.

In the absence of fistula and adhesions, when the history, progress of the disease, examination of the patient, and, above all, the presence of a biliary tumor and exploratory puncture reveal the presence of biliary calculi, Boeckel recommends cholecystotomy; but he holds that this operation is not otherwise justifiable. On the contrary, it is clear that we arrest the progress of the inflammatory disturbance in the tissues by evacuating the distended gall-bladder. Delay in undertaking the appropriate measure of relief brings disintegration of structure, which undermines the recuperative powers of the

system; and this tendency to disorganization may be arrested by an early recognition of the nature of the case and a timely resort to a judicious operative measure.

The earliest report on record of a radical operation for relief of the gall-bladder is that of Bobbs, on June 15, 1867, upon a lady, thirty years old. The gall-bladder was emptied of its limpid fluid contents and several solid concretions, the incision in its walls being stitched and the ends cut close, while the sac was returned into the abdominal cavity. Her recovery was rapid and without an untoward symptom. The prophetic allusions of Sharp, Goode, Block, Morgagni, André, Petit, and Moraud paved the way for the more precise suggestions of Thudichum, Daly, and Maunder, which ushered in this first performance of cholecystotomy in due form and the formulating of such an operation by Sims in 1878. The practical outlook was not improved by the untoward results of the radical proceedings of Sims and Keen in their cases of dropsy of the gall-bladder. The condition of the ductus choledochus is not reported in the autopsy of Keen's case, but it is inferred from the post-mortem examination in the case of Sims that obstruction of the common duct did not exist.

Encouragement has been drawn, however, even from these failures, for a repetition of similar operations; and notices of the steps taken in other cases by various operators are reported in the January number of the *American Journal of the Medical Sciences* for 1879, by Keen, and in that of October, 1884, by Musser and Keen. In the table of thirty-five cases by Musser and Keen there are four cases in which the abdominal incision was made without opening the gall-bladder; there are two cases in which the gall-bladder was sutured and dropped into the abdominal cavity; five in which the gall-bladder was extirpated, and one in which a connection between the gall-bladder and the intestinal canal was effected. It is inferred that in the remaining twenty-seven cases the edges of the incised sac were sutured to the borders of the wound in the parietes. It is stated that there were twenty-one female and nine male patients, leaving the sex of

five unknown. As in the cases of Kemper, there is a large preponderance of women over men among the subjects of this operation. According to Musser, there are four pronounced conditions which are dangerous as sequences of biliary obstruction, and which may be looked upon as indications for operative interference. They are: jaundice; a tumor in the right hypochondrium, presumably an enlarged gall-bladder; frequently recurring paroxysmal pain, and symptoms of suppuration.

The diagnosis of obstructive jaundice having been made out, and the irremediable diseases of the liver being eliminated, it is next important to define the nature of the obstruction, for only some varieties would admit of interference. In seventeen tabulated cases of obstruction it was caused by gall-stones thirteen times; cancer of the pancreas, perihepatitis, and gastro-duodenal catarrh each caused it once; and in one case it was doubtful.

The causes in general of stenosis in the bile-ducts are considered to be three: 1. Foreign bodies within the ducts (gall-stones, parasites, etc.). 2. Diseases of the walls of the ducts (*a*, congenital; *b*, adhesive inflammation or cicatrization of ulcers; *c*, perihepatitis). 3. Tumors, etc., external to the ducts.

The enlargement of the gall-bladder is generally pyriform in shape, or it forms a semi-globular or globular tumor, and is usually movable, tender, elastic, and fluctuating, but may have different qualities, and the intestine is never in front of the growth.

Acupuncture and aspiration in advance of opening the abdomen are advocated by Keen for the diagnosis of affections of the gall-bladder; but the resort to such exploratory punctures is not sustained by general experience. Yet, it is well known that other prominent men concur in the propriety and expediency of this course, and Bartholow claims that this diagnosis can be reduced to an absolute certainty, while Harley insists strenuously upon its safety and efficacy. Being satisfied that this preliminary step is not requisite for the

practical management of such cases, and that unforeseen risks attend these modes of exploration, while safer means of investigation may be relied on for a correct diagnosis in this class of disorders, I cannot acquiesce in this measure for the detection of gall-stones in the sac, or for the removal of its fluid contents, in preference to an exploratory incision and examination with the finger. While recognizing these preliminary processes, exploratory operations are sanctioned by Keen, and, if the ascertained condition warrants further steps, to be followed by cholecystotomy. He inculcated, as a rule, that the incision should be made over the centre of the tumor and parallel to the free border of the ribs. The greater facility of access to the tumor overbalances, in his estimation, any less hemorrhage from the linea alba. It should be sufficient for exploration, being made about three inches in length, and enlarged, if need be, afterward. All bleeding should be arrested by hemostatic forceps or catgut ligatures, before opening the peritoneum. This being done by incision upon a director, to avoid wounding the sac, two fingers should be used, or, if necessary, the whole hand, to explore the conditions of the various abdominal organs and learn the exact nature, attachment, etc., of the tumor, and, so far as possible, the character of its contents. The cystic and common ducts are to be examined to determine the presence and situation of gall-stones, with their size, shape, and mobility. If any be found in the ducts, the suggestion of Handfield Jones, to endeavor to push them into the duodenum, should be tried. This failing, we should endeavor to push them back into the gall-bladder, as this part of the duct has already been dilated by their onward passage. Whether we can find any stones or not, if the bladder be distended with fluid, it should be aspirated and its wall cut to the extent of an inch or more, if necessary, the scoop of Keen being used to carry off any liquid contents that might otherwise flow into the abdomen, and, at the same time, to keep back the intestines that are prone to escape from the cavity. By the probe, and forceps of various forms, any gall-stones that are lying loose in

the sac may be discovered and removed. It is not always practicable to find all the stones at the outset, and those not encountered at the operation have escaped subsequently or have been extracted by the operators. This shows the propriety of exploring the cavity of the gall-bladder and cystic duct, on dressing the wound, during the first week after the operation.

The first case of Parkes is very instructive touching this point, and in his graphic account of it on January 27, 1885, I was informed that an exploration of the cavity of the gall-bladder on the occasion of the operation failed to find any stones in the bladder. On the second day the dressings were charged with a profuse flow of greenish-colored fluid from the fistula. On the fourth day again dressed; while probing the bladder this day he detected and removed two stones. On the seventh day he found and removed five stones, one as large as the end of the finger. None were found subsequently. The patient was entirely free from pain for three weeks, all of the bile apparently coming through the fistula. At the end of this time the old pain returned, and there was no bile in the feces. A second operation, making a vertical incision from the centre of the first, detected no more stones, and he passed a No. 10 Van Buren sound through the fistula and common duct into the duodenum. The fistula healed entirely in two weeks, but the recurrence of pain led him to reopen it and introduce a drain, thus giving relief.

He was satisfied that a contraction of the common duct existed, rendering it too small in calibre to carry off the biliary secretion, and that, for the time being, the fistula would have to be maintained. Had this been evident on the occasion of passing the sound, Parkes might doubtless have accepted my suggestion on page 380 in the October number of *Gaillard's Journal*, that "in case any communication with the duodenum exist, however small it may be, dilatation of the ductus choledochus should be attempted."

Notwithstanding the assurance of Parkes that his finger in the abdominal cavity guided the sound through the cystic

and common ducts into the duodenum, and the statement of Sims, in the autopsy of his case, that "Ganal was able to pass a probe from the gall-bladder through the ductus communis choledochus into the duodenum," I observe at page 100 of the *Medical Bulletin* for April, 1885, that Bartholow questions the praeticability of catheterization and consequent dilatation of these ducts. While I encountered this difficulty in the post-mortem of a dog, reported at page 83 of the *Southern Medical Record* for March, 1885, numerous other examinations were made in dogs, presenting no obstacle to the passage of a sound from the gall-bladder through the cystic and common ducts into the gall-bladder. While a straight metallic probe may not pass readily from the cystic into the common duct, there is no embarrassment in carrying a curved sound or an elastic bougie from the gall-bladder into the duodenum, and hence in cases of partial constriction of either duct the successive use of graduated sounds or bougies may be relied upon for dilatation of the passage.

With the lights before us, it is clear that an effort should be made to overcome temporary obstructions of the ducts, and if concretions exist which cannot be moved in either direction by pressure from without the canal with the fingers, an effective recourse is found in adopting the expedient of Tait for crushing the masses with padded forceps, and leaving the fragments to be flooded out by the bile. This suits cases not requiring incision of the sac, but he is in favor of establishing a biliary fistula temporarily, and a large fenestrated drainage-tube should be inserted while the whole abdominal wound is securely closed excepting at the opening for the attachment of the incision in the sac. A compress and bandage should be used to obviate any tendency to ventral hernia after the operation.

Keen also regards the creation of a biliary fistula as the better procedure, yet he holds that in case a probe could be passed into the duodenum, with a reasonable assurance that all stones have been removed, closure of the gall-bladder by Gély's suture, or otherwise, might be done with propriety.

In comparing the different measures adopted by surgeons for the relief of a distended gall-bladder we shall find that their relative advantages depend upon the greater or less probability of restoring the bile to the intestine.

Whatever may be the properties of the bile, it would seem to have been designed for a useful purpose by admixture with the chyme soon after leaving the stomach, and, in combination with the pancreatic secretion, enables the lacteals to take up the nutritive elements of the food. While serving as an antiseptic, it also promotes the peristaltic action of the intestines. If a stone remain in the cystic duct, the sac will be refilled with its own secretion, and if in the common duct, by bile; but should all the stones be removed, and the ducts be pervious, the fistula will soon close under the use of a drainage through the duct into the duodenum.

Should the bile be certainly restored to its natural channel on the occasion of an operation, the closure of the incision in the sac and dropping it into the abdomen, with complete suture of the external wound, are advisable.

Besides the case of Bobbs, in which only one stitch was used to close the incised sac, those of Courvoisier and Bernays, operated on by this method, have proved entirely satisfactory. Even the fatal case of Meredith, in which the incision of the gall-bladder was closed with the continued suture and droped into the abdominal cavity, proved the feasibility of immediate closure under favorable conditions. In the succinct report of it forwarded to me February 11, 1885, the author states that this patient died in forty-eight hours, with suppression of urine. "At the autopsy the incision of the gall-bladder was found securely closed and quite impervious to fluid. The gall-bladder itself contained a quantity of bile, as did also the duodenum. The ducts were quite unobstructed throughout. Several ounces of bile were found lying free in the peritoneal cavity among the folds of the mesentery, having evidently escaped during the operation from the sponges which I had inserted around the gall-bladder while emptying it. All the viscera were fairly

healthy, with the exception of the kidneys, both of which were small and contracted, with adherent capsules, and showed evidence of recent congestion."

The case of Dr. Courvoisier died from pneumonia two and a half months subsequent to the operation, and the autopsy showed a perfect union from the suture of the incised wall of the gall-bladder.

There are some cases in which complications exist that preclude the completion of an operation which has been undertaken, such as extensive disorganization, the agglutination of the tissues, or the evidences of malignant disease. Of the last Senn reported an interesting case to me on February 11, 1885, with the remark that it is sometimes more important to report unfavorable than favorable cases. After all due precautions, an incision about four inches in length was made over the most prominent part of the tumor and parallel to the right costal arch, when he discovered well-marked evidences of malignant disease in the shape of nodular and irregular masses over the common duct, and no further efforts were made to establish a biliary fistula. The patient recovered well from the effects of the operation, the inroads of the malignant disease terminating her life four weeks afterward.

A parallel case to this has been reported since in Germany, and though, as Senn states, primary cancer of the bile-duct is an exceedingly rare occurrence, scirrhus of the pancreas and pylorus often involve it in disease.

Some interesting and instructive notices of the great advances made in operative procedures for disorders of the gall-bladder appeared in the numbers of the *Medical News*, of Philadelphia, for December 20, 1884, and February 14, 1885. In the editorial department on the latter date, alluding to cholecystotomy and cholecystectomy, it is said that neither operation is justifiable unless the common duct is patulous and icterus is absent. This implies that the escape of bile by an external fistulous opening, as ordinarily provided for in cholecystotomy, is not considered proper, since there could be no embarrassment to its outlet, provided that the cystic

duct be patulous. This plan of giving exit to the bile by a fistulous opening through the skin may be replaced by that of causing it to return to its proper destination for the efficient performance of its office in the animal economy. When the outlet of the common bile-duct is permanently closed and the bile finds its way from the hepatic duct through the cystic duct into the gall-bladder, the most philosophic proceeding is to effect a direct passage of the bile from the gall-bladder into the duodenum.

In my first series of experiments upon dogs for testing this union of the gall-bladder and duodenum, a circular row of catgut continuous suture attached the serous membranes around an elastic ligature connecting the two walls. This was under the impression that it was requisite to excite adhesive inflammation, by which the surfaces should become agglutinated. But it was productive of undue disturbance, and in the last case of that series it was observed that sufficient inflammatory action ensued from the insertion of a single stitch of silk thread to unite the walls of the gall-bladder and duodenum, with the further observation that this loop cut an opening between the two cavities. In case an incision be made into the sac for exploration, it may be closed by Lembert's suture separate from the parieties of the abdomen; and the external wound may then be sutured throughout without any provision for drainage, as the bile passes very soon through the apertures of the thread and ultimately through the fistula.

With a view to diagnosticate distention of the gall-bladder, all tumors connected with the liver should be examined with care. A peculiarly complicated case of laparotomy is reported by Bauer in the St. Louis *Medical and Surgical Journal* for June, 1886, in the person of a mechanic aged forty years. This case was calculated to mislead the operator, in view of the fact that "immediately below the right hypochondrium there was a tumor obviously connected with the liver, since it moved contemporaneously with that organ. It presented a semi-globular form, about three inches in diameter, was

smooth and elastic to the touch, and withal very tender." The author leaves us entirely in doubt as to his preconceived view by saying that although he had formed some diagnostic views on the nature of the tumor, believing that laparotomy is the only trustworthy diagnostic method, he proceeded to operate.

A paper read by Keen before the Philadelphia Academy of Surgery, November 2, 1885, presents some interesting points bearing upon the relations of the duodenum to the gall-bladder.

An interesting case of fatal obstruction of the ileo-cæcal valve by a gall-stone was reported by Dr. Russell H. Johnson in the *Medical News* of June 27, 1885. The author states that "the facts of the case warrant the conclusion that the gall-stone under consideration escaped from the gall-bladder by means of a fistulous tract connecting with the duodenum," and remarks further that, "autopsic examinations (especially those made by Murchison) have in many instances shown the presence of these fistulas, and lead us to infer that it is not a very unusual occurrence. The inflammatory action which is sometimes set up in the tissues of the gall-bladder seems to point to relief in the direction of the duodenum, and an autopsic observation of the ulcerative process by which the contents of the gall-bladder passed into the canal first directed my attention to the practicability of effecting a direct communication between these two organs. No measure apart from that of Winiwarter had been adopted previously with a view to convey the bile from the gall-bladder into the intestinal canal. In his case the gall-bladder was first united to the colon, and after the lapse of some time he established a fistula between the sac and the small intestine by uniting them with stitches, suturing the intestinal to the abdominal wall, and opening the gut on the fifth day, puncturing the opposed surfaces through the incised intestine, and finally closing the latter with sutures. This operation of Winiwarter was intended to remedy the occlusion of the common bile-duct by effecting an artificial communication

with the intestine for the passage of the bile, and, while it failed to realize the advantages expected from a cholecysto-duodenal outlet, the partial success of this procedure shows the tolerance of similar measures by the respective structures involved. No complication arose in Winiwarter's case from the coils of intestine, the constriction of its lumen, or the regurgitation of its contents into the gall-bladder; and much less are such difficulties likely to occur in the attaching of the sac to the duodenum. For then not only would the pent-up bile be removed, but the disturbances arising from the non-admittance of bile into the intestines. The practical discernment of Harley led him to the conclusion that the triumph of operative surgery would be to establish an artificial fistula between the gall-bladder and the duodenum. For then not only would the pent-up bile be removed, but the disturbance arising from the non-admittance of bile into the intestines likewise be at the same time overcome. "I am not quite sure," he remarks, "if, in these days of antiseptic surgery, the operation is not practicable; for I can see no reason why the adjacent surfaces of the gall-bladder and duodenum should not be eroded by potassa fusa and speedily stitched together." The principle of cholecysto-duodenal communication seems to have been grasped in this suggestion for creating a fistulous opening; but the process of accomplishing it presents objectionable features which do not hold against the plan of uniting the two walls by a loop of suture which shall induce an amount of adhesive inflammation sufficient for the union of their outer surfaces, with a certainty of cutting through the adjoining tissues and effecting a passage of the bile from the gall-bladder into the duodenum.

Harley is justly entitled to priority for the publication of this suggestion "to establish an artificial fistula between the gall-bladder and duodenum," as his book on diseases of the liver, which contains it, appeared prior to the publication of my article in *Gaillard's Medical Journal* on Gaston's operation, entitled "Obstruction of the Gall-duct and its Bad Consequences, with Remedial Operation Suggested." But it

is due to myself to state that his work had not been seen, nor was I aware of his suggestion when my paper was published.

In like manner, it may be stated that I did not know of the operation of Winiwarter, though it was recorded in a foreign journal in 1882, and published in the October number of the *American Journal of the Medical Sciences* for 1884.

But putting aside the question of priority, it is proper to note the difference in the predetermined recourse to the ligature for opening a communication from the gall-bladder into the duodenum, which shall at the same time induce a firm union of their outer surfaces, from an incidental attachment of the sac to the large or small intestine as done in his case.

It must be perceived that his mode of proceeding has quite a dissimilar effect from the operation that was suggested by Harley or from that process which I adopted afterward for establishing the flow of the bile into the duodenum, which McGraw has indorsed. The close proximity of the duodenum to the lower and under surface of the distended gall-bladder, with more or less thickening of its walls, affords favorable conditions for this operation; and it is in evidence that greater tolerance of the textures for surgical interference is presented after the disorders connected with biliary obstruction have diminished the tendency to active or acute inflammation. The results attained by operators have attested these facts.

A class of operations calls for attention in connection with impaction of biliary calculi in the cystic or common ducts which cannot be dislodged by the means already mentioned. The incision of the wall of the duct by the knife or scissors, constituting this operation for the removal of stones, has in most cases been closed afterward by suture; but when this is impracticable it may be left open, and the intervening space should be packed with gauze, leaving the ends protruding at the external wound, to effect drainage and prevent the entrance of bile into the peritoneal cavity.

The various modes of procedure adopted by different oper-

ators in effecting cholecystenterostomy include anastomosis of the gall-bladder with the duodenum, the small intestine, and the colon, by different processes beside that of union by a stitch of silk thread or the elastic ligature. The attached surfaces have been sutured, with the cut edges brought together, or the division made after nearly completing the circuit. The bone-plates have been employed to approximate the walls of the gall-bladder and intestinal canal, and the Murphy button has latterly been used in most cases for this anastomosis. There has been a fair measure of success by each of these procedures, and the choice of operators in the future will depend to a considerable extent upon the conditions presented in the individual case.

MULTIPLE (TRIPLE) STRICTURE OF PROBABLE TUBERCULAR ORIGIN WITHIN THIRTEEN INCHES (33 CMS.) OF THE JEJUNUM.

Resection and Circular Enterorrhaphy by Maunsell's Method, followed by Complete Recovery; with Remarks on Multiple Intestinal Strictures.

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While the comparatively recent contributions of Bouilly, Schier, Billroth, Durante, Czerny, Koenig, Salzer, Hofmeister, and others have fully established the importance of the tubercular process as a frequent and most important cause of stricture in the ileo-cæcal region, the occurrence of multiple stricture of the small intestine attributed to this cause is not so generally recognized, and I trust that reference to this subject, and the presentation of an illustrative case, will not be considered superfluous. I have been prompted to present this observation not only because I believe that the subject itself is worthy of agitation, but also because the type of the strictures observed and the multiple character of lesions in the jejunum, so far away from the favorite seat of tubercular infection, viz., the ileum and the ileo-cæcal region, justify its present record as a rare occurrence. Furthermore, as an illustration of the value of enterectomy and the method adopted in performing it (Maunsell's method), I believe it also presents technical features which may have some bearings on the history of the operative treatment of this condition, which is still in process of evolution.

In the latter part of April, 1896, I was consulted by Mr. W. H., of Texas, a civil engineer, for the relief of an obscure complaint which had very gradually but progressively undermined his health during the last twenty years. He is a tall man, over six feet in height, and forty-six years of age. When the patient was referred to me through the kindness of my colleague, Professor Elliott, he presented an exceedingly thin, weak, and gaunt-looking appearance. In addition to his profound emaciation, his face indicated long and continuous suffering. He at once referred all his troubles to his abdomen, which had been the seat of paroxysmal attacks of pain, of variable intensity, since 1869, and which, in view of their repeated occurrence, foreshadowed the more serious complaint that now existed.[1] His troubles had not become distinctly localized until about two months ago, when he felt a slight but distinct tumefaction in the left umbilical and lumbar regions. The appearance of this swelling coincided with a most violent paroxysm of pain, vomiting, fever, and constipation, which threatened his life for several days, when the acute symptoms gradually subsided, leaving a large, tender mass, which is at present distinctly recognized on abdominal palpation.

Upon examination I found the abdomen exceedingly thin and retracted. By palpation and inspection a distinct tumor could be recognized in the lower part of the left half of the abdomen. The centre of the swelling occupied a spot which was crossed by a line drawn from the umbilicus to the left anterior superior iliac spine. In size, contour, and mobility the tumor suggested a large movable left kidney. The mass could be moved up and down from the costal arch to the iliac crest; laterally from the umbilicus to the lumbar region. The mass spontaneously shifted its position, and was larger at times than at others. An experienced physician, who had seen him at his home, believed that this was a floating kidney,

[1] From 1871 to 1877, while at school, he was almost entirely free from pain. In 1879 he had a spell of vomiting and purging, with intense abdominal pain, which confined him to his bed eight weeks.

which caused crises of abdominal pain from torsion of the pedicle. He had consulted numerous physicians during the many years that he had suffered with his complaint. In the beginning of his complaint he was treated for gastralgia, then for intestinal indigestion, gall-stones, renal colic, etc., but nothing gave him any permanent relief. His description of his symptoms was, nevertheless, very striking and suggestive.

When he came to me he could eat anything, as far as simple admission of food into the stomach was concerned. His stomach accepted all food without rejecting it, but about two hours after ingesting his meals he would begin to suffer most intolerable and agonizing pains in the left hypochondriac and umbilical regions, which were accompanied by persistent nausea and vomiting. This condition of intolerable suffering would culminate in such unbearable and agonizing pain that only large doses of morphia (one and two grains), administered hypodermically by his wife, would suffice to quiet him. At times, when he committed any indiscretion in his diet, the pains were so violent that even morphia failed to relieve him, and chloroform by inhalation had to be appealed to to allay his sufferings. Coarse food, fruit, and vegetables were always certain to provoke these attacks. When he limited his nourishment to milk and soups he suffered less pain. After years of experimentation with various articles of diet, he finally gave up everything but milk and beef-tea. Lately even milk would disagree with him, and following the advice of his physicians he had been compelled to resort to nutrient enemas to assist his nutrition. His condition became very much worse after the appearance of the abdominal tumor. After the lump had formed he soon realized that any indulgence in solid food might cost him his life, so that when I saw him he lived on an exclusively fluid diet. In the vomiting that followed the ingestion of even soft, semi-fluid food (eggs, oatmeal, and cornmeal) he noticed that frequently no relief would come to him until he had expelled every particle of the food taken.

He described his abdominal pains as "colics," which began

intermittingly, but rapidly became continuous and agonizing. Before the acme of the paroxysms was reached he felt his bowels contracting and twisting in an indescribable manner, but these movements were soon lost to the touch, owing to the extreme rigidity of the abdominal muscles, which became spasmodically contracted and hard as a "wooden board." His bowels were usually constipated, a condition which he attributed to the frequent use of morphia, and he was often compelled to resort to purgatives, salines, seidlitz powders, and castor oil to relax them. At times a diarrhœa would set in without any assignable cause.

In view of the progressive aggravation of his condition, he finally decided to have a radical operation performed that would release him, no matter at what risk, from his present "martyrdom."

In questioning him as to his family history, I learned that he was the descendant of very healthy and long-lived parents, except a grandfather on the paternal side, who had succumbed to some pulmonary trouble. His contemporary relatives had not suffered from known pulmonary or cancerous lesions; he had no children. As far as his personal history was concerned, he said that up to the age of twenty he had enjoyed exceptionally good health. He had never had any suspicion of venereal disease; he never indulged in alcoholics. He remembered, however, that in his childhood he had a protracted and rebellious diarrhœa, from which he had apparently fully recovered when the first signs of his present illness (occasional colics) led him to remember his early bowel ailment, though he failed to associate this with his present condition. He had had malarial intermittent fevers in his childhood and pneumonia in 1872. A careful general examination failed to reveal any sign of disease in any part of the body but the abdomen.

In my mind, the history given by the patient clearly indicated an obstructive intestinal lesion, but what was the nature of the obstruction, what the character of the tumor that was now so clearly discernible in the abdomen, was not so plainly

defined. The long period of time that had elapsed since the beginning was not compatible with the primary existence of a malignant neoplasm, the tumor in the abdomen having developed suddenly and only in the previous two months.

A secondary carcinoma of the intestine engrafted upon an old intestinal lesion was possible, however. A displaced kidney, following the relaxation of the peritoneum consequent upon a progressive emaciation and fat absorption (nephroptosis), suggested itself as another possible diagnosis. But the right kidney was not displaced, and there was no evidence of the relaxation and displacement of the colon or other viscera which Glenard and others have so clearly described as "enteroptosis" and "splanchnoptosis," and which is so likely to be associated with fat absorption and peritoneal relaxation.

Then there were no reflex renal symptoms; no abdominal sensations referable to the bladder or urinary apparatus, which are likely to exist in such cases. In addition, the urine was perfectly normal, though scant and of high specific gravity. The possibility of simple stricture from previous ulceration did not suggest itself, as the patient's history of previous diarrhœa in early childhood was not remembered until subsequent events and cross-questionings on my part served to revive the recollection of an early bowel complaint.

Other possible conditions, of course, suggested themselves to account for the tumor, but none appeared satisfactory or conclusive. I, therefore, could not arrive at any complete diagnosis except that there was some form of obstruction of the bowels associated with the development of an abdominal tumor of unknown nature and origin, but probably connected with the small intestine. I, therefore, agreed with the patient that the best course to pursue would be to perform an exploratory laparotomy—a conclusion which he hailed with great satisfaction.

He was admitted to the New Orleans Sanitarium, and after a few days of careful preparation, during which he was given gentle laxatives and strengthened with hypodermics of strychnine and digitalin and by enemas of peptonized foods, he was

operated on on April 24, 1896. Under ether a median incision was made between the umbilicus and pubis large enough to allow the hand to palpate the mass. No clear idea could be obtained of the nature of the tumor until it was brought to the surface, where it was recognized as a loop of small intestine, which was twisted upon itself very much like an elongated (Ω) omega. It was largely covered by the omentum, which was firmly adherent in many places. In addition to this it was plastered and held in its peculiar shape by bands of old peritoneal exudates and pseudo-membranous formations. After enlarging the abdominal incision a little further, the entire loop of bowel with its mesentery was completely extruded out of the abdominal incision, and a search was made for further abnormalities in the remainder of the intestine, but none were discovered. The bowel was traced upward toward the stomach, and at a distance of about three feet from the tumor the terminus of the duodenum was recognized at the crossing of the superior mesenteric artery. Further exploration of the small intestine downward from the tumor, toward the cæcum, revealed a perfectly normal condition.

A further examination of the diseased loop showed that it was evidently a portion of the jejunum. The valvulæ conniventes were in some places remarkably thick and large, and could be distinctly felt through the bowel walls, which were abnormally dilated above the loop. It was difficult to determine that the abnormal bowel was strictured at all until several bands of adhesions and masses of adherent omentum which covered it had been removed. It was then easily perceived that the bowel was contracted and very thick in several places. The coats of the bowel in the loop were thickened throughout. In some places where the omentum was adherent there were areas of marked injection of the serosa and fresh flakes showing recent patches of localized peritonitis. The mesentery connected with this loop was unusually thick, injected, and œdematous, thus contrasting markedly with the other portions of the mesentery, which were very thin and almost translucent. The thickening of

the mesentery appeared to be due to chronic infiltration with inflammatory œdema and exudates. The mesenteric glands corresponding to this area were also distinctly enlarged and hard.

As the patient had withstood the exploration without any evidences of serious shock, I decided to excise the entire loop with its corresponding mesentery and to perform a circular enterorrhaphy. The intestine was completely empty of all contents, and in a very favorable condition for extirpation. After thoroughly protecting the peritoneal cavity with towels, so that the operation would be performed outside of the abdomen, the loop that was to be excised was completely excluded by clamping it with long, thin-bladed forceps. The healthy bowel beyond this point was compressed by two long intestinal clamps applied over thin sponges and aided by the fingers of an assistant. The intervening healthy portion of the bowel was then divided with scissors and with it a wedge-shaped section of the mesentery was removed. The bleeding from the mesentery was provisionally controlled by forcipressure, as the vessels were divided and permanently controlled by suturing the cut edges together with continued fine silk sutures. By this means the entire thickened and abnormal mesentery was removed. The Maunsell procedure for circular enterorrhaphy was then adopted, and in less than twenty minutes a very satisfactory joint was secured. A few extra sutures, made with fine silk, aided in giving greater security to the joint, and, by burying the through-and-through sutures of the Maunsell procedure, effectually diminished the risk of sepsis.

After completing the enterorrhaphy and thoroughly washing the united surfaces with normal salt solution, the joint was dropped into the peritoneal cavity; but for the sake of greater security, two long but narrow iodoform gauze drains were placed on each side of the united bowel so as to surround the line of suture completely. The thin edge of the abdominal wound was now closed completely with silkworm and catgut sutures, except at the centre, which was allowed to remain open to give exit to the gauze strips. The operation

consumed one hour, but the patient suffered very little from shock, though he was frequently nauseated and attempted to vomit. He recovered rapidly, though he suffered from nausea and vomiting until the third day, when, after the administration of one ounce of Epsom salts by enema, he had a free watery evacuation of the bowel, and was greatly relieved in every way.

The gauze packs were removed on the third day. Their removal was followed shortly afterward by the escape of some flatus *per anum*, and the patient was much relieved of pain caused by the active peristalsis and gurgling of the bowels. Nothing was given by the mouth except a few spoonfuls of very hot water and broken ice until the fourth day. The patient was stimulated regularly by the hypodermic injection of one-fortieth of a grain of strychnine every six hours. Water and food were furnished by rectal enemata administered systematically every five hours. These enemas consisted of 1 teaspoonful of beef juice, 1 tablespoonful of whiskey, 5–10 drops of digitalis, and 6 to 8 ounces of water.

After the operation the specimen was examined and found to represent thirteen inches of very much altered jejunum. It presented three exceedingly narrow constrictions, the largest of which barely allowed a No. 5 E catheter to pass through it. They were situated as follows: The first and second strictures were separated by an interval of nearly five inches; the second and third by an interval of two inches. The strictures were caused by very thick circular rings of hypertrophied cicatricial tissue. At the point of constriction the mucous membrane was smooth, pale, and apparently divested of all epithelial covering. A dense ring of cicatricial tissue occupied the submucous tissues and indicated that the original ulceration which had undoubtedly existed at some time past, but was now entirely healed, had begun in the subepithelial strata and penetrated the submucous layers. At several points the excessive outpour of exudates and agglutination of the omentum to the serosa showed that the ulceration had threatened to perforate the bowel completely. The bowel was dis-

tinctly sacculated in the spaces between the strictures. In the vicinity of the strictures the muscular and submucous coats were remarkably hypertrophied. The mesenteric glands had undergone a sclerogenic process, and, though larger than usual, were firm and hard, except in the centre, which showed some *foci of caseation* undergoing calcification and other conservative involution changes. It was evident that the original infection that had irritated them had been almost completely eliminated.

The excised bowel contained a little fluid, but no hard particles of food. The high situation of the strictures, about three feet from the terminus of the duodenum, or four feet from the pylorus, partially accounted for the remarkable escape of the patient for so many years from the dangers of total obstruction. The liquid character of the intestinal contents at this point, preventing a total fecal obstruction, which would have been more likely to occur in lower portions of the intestine, the frequent and desperate attacks of colic, with vomiting, prove, however, that at times even very soft and easily digested foods would reach the strictures without sufficient maceration and succeeded in temporarily blocking up the opening of at least one of the strictures.

It should be stated that the existence of *multiple* strictures was not recognized until after the operation, when the excised piece of gut was opened, and it was found to be distinctly strictured at the points referred to.

In these places the strictures were formed by thick, concentrically hypertrophied rings of cicatricial tissue.

The patient began to eat soft-boiled eggs and milk on the fourth day after the operation. After this, more food of a semi-solid consistence was given, with a great deal of water, until the end of the twelfth day, when some chicken, tea, and more solid food were added. When he left the Sanitarium (May 27), thirty-four days after the operation, he could eat three full meals a day without experiencing the least distress or inconvenience. It is now (March 27, 1898) one year and eleven months since the operation was performed, and the

Specimen of jejunum resected from multiple tubercular strictures.

patient has steadily gained in weight and strength. From less than a hundred pounds, which he weighed when he came to see me, he now weighs nearly 180 pounds. He pursues his vocation without interruption. The only event that marred his recovery for a short time was the formation of a small abscess in the centre of the scar of the abdominal incision. This abscess opened spontaneously about three months after his return home. He came back to me in considerable alarm, but I was soon able to relieve his mind by extracting six knots of ligatures which, I presume, had been detached from the mesentery. After the removal of these knots of silk threads, the sinus healed rapidly, and the patient has never been annoyed since. He now eats of everything, enjoys his food, and never complains of his bowels.

The points of interest presented by this case are: 1. The difficulties, almost insurmountable, in making a satisfactory diagnosis of the true condition before operation. 2. Difficulty and practical impossibility of determining the true nature of the obstructive lesion until after the removal of the diseased bowel, which was opened and found to present three distinct strictures. 3. The unusually high position of the lesions in the jejunum. 4. The unusually long and slow evolution of the stenotic process (over twenty years). 5. The apparent complete disappearance or cure of the primary ulcerative cause—tuberculosis. 6. The repeated recovery of the patient from numerous attacks of acute obstruction brought about by the plugging of the narrow orifices of the strictures by food-masses or other accidental causes. 7. The existence of a tumor simulating a displaced organ or neoplasm, a condition which evidently resulted from repeated attacks of localized peritonitis, which caused adhesion of the intestinal coils and omentum and the outpour of a mass of plastic exudate, evidently intended by nature as a conservative process to protect the bowel from rupture during the attacks of acute obstruction caused by the plugging of the strictures. 8. The marked hypertrophy of the muscularis of the intestine, especially on the proximal (gastric) side of the strictures, a com-

pensatory process to aid the bowel in propelling the intestinal contents through the narrow constrictions. 9. The survival of the patient under these dangerous conditions without fatal permanent obstruction, owing in a great measure to the liquid character of the contents of the intestine in the constricted portion. 10. The limitation of the ulcerative process that led to the stenosis to a restricted portion of the bowel, as ascertained by a careful examination of the entire bowel tract during the operation. 11. The apparently complete and permanent cure obtained by the operative procedure adopted, viz., enterectomy. 12. The simplicity and security of Maunsell's method of circular enterorrhaphy as applied in this case.

Apart from the features of individual interest presented by this case, there are a few general but all-important questions that it suggests which will be well to consider. Among these the problems that relate to diagnosis are most prominent. How is the diagnosis of multiple stricture of the small intestine to be made *intra-vitam* apart from operation? If there are obstructive symptoms, and the history of the case suggests, as in this instance, the classical signs of progressive stenosis of the bowel, we, of course, endeavor to know what is the nature of the strictures—*i. e.*, are they of tubercular, syphilitic, digestive, so-called catarrhal, peptic, or are they neoplastic, and especially cancerous? Then, are the strictures single or multiple? What is the amount of bowel involved? If the strictures are multiple, it is especially desirable to know in what part of the intestinal tract they are situated, and what is *the distance* that separates the obstructed portions. Again, if strictures exist, are they causing the obstructive symptoms in virtue solely of pure cicatricial contraction of the lumen, or are they due to simple accidental plugging, or to secondary inflammatory processes, etc.?

The importance of these questions is self-evident to the operator or practitioner who is confronted with such problems. A careful analysis of the patient's history and clinical phenomena will greatly elucidate the case and aid in approximating the diagnosis. But a complete and satisfactory diag-

nosis is impossible in unfortunately too many, if not the majority, of cases. Next to determining the true nature of the obstruction and its location, the question that interests the operator most directly is that which refers to the *number* of the strictures and their situation when these are multiple. But here, again, unfortunately, these questions must remain unanswered until an exploratory laparotomy reveals the actual state of affairs. For this reason we see that there are few cases recorded in which the diagnosis has been accurately made before actual exploration. It may be also truly said that there are few abdominal conditions which justify more often an exploratory laparotomy, and which, after this has been undertaken, more thoroughly tax the resources and judgment of the operator. For this reason it is plain, also, that the surgery of intestinal stricture is of comparatively recent origin, and in fact owes its birth to the conditions which have made surgical intervention in the peritoneum successful, viz., the aseptic practice and perfected technique of the last two decades.

As the *multiple* strictures of the small intestine are those which offer the greatest complexity, it will not be amiss to inquire into the relative frequency of this class of obstructions. In his classical monograph on *Intestinal Obstruction* (American edition, 1884), Treves presents us with a synopsis of seventy-eight cases that he was able to gather in the literature of the subject up to 1884. Of these, twenty-six were cases of stricture of the small intestine, eight cases of stricture of the ileo-cæcal valve, and forty-four of stenosis of the colon. Of the twenty-six cases of stricture of the small intestine, ten were due to cicatrix after ulcer; two to cicatrix after injury; four following after strangulated hernia, and ten after cancer. Of the cicatricial strictures of the small bowel the most frequent in spite of their actual variety are, no doubt, those due to primary or secondary tubercular infection. It is now recognized that, notwithstanding the frequency of tuberculosis of the bowel, this condition is rarely followed by complete *cicatricial* stenosis. Yet it is undeniable, in the

light of recent experience, that tubercular ulceration in the bowel is capable of producing obstructive conditions; not so much because of cicatricial retraction, but, as Koenig, Czerny, and Hofmeister have demonstrated, by the fact that deep-seated tubercular ulcer will give rise to so much secondary inflammatory thickening, œdema, and plastic exudation that the lumen of the bowel will be narrowed and obstructed. In other words, a distinction must be made between the hypertrophic inflammatory type of tubercular stricture, which is relatively common, and the circular or cicatricial form, which is very rare, and is a sequel of cicatrizing surface infection. In confirmation of this statement we find that "Eisenhardt, of Munich, as a result of 1000 post-mortem examinations made upon tubercular subjects, found evidences of tuberculosis in the bowel tract in 566 cases, and yet in only nine was the bowel strictured from this cause." On the other hand, Hofmeister,[1] from whom I have borrowed this statement, has been able to collect eighty-three reported cases in which operative intervention was applied for stenotic lesions caused by tuberculosis. In thirteen of the cases collected by Hofmeister the operations were performed for *multiple* tubercular strictures; in sixty cases for *single* strictures. In eight cases multiple strictures existed, but these were only recognized at the post-mortem, as no operation was performed.

All of these cases (ninety-one) were reported in the period beginning with 1880—*i. e.*, within the last seventeen years. Again, if we were to examine the older literature of the subject—*i. e.*, that which preceded the present operative period—we would find, in the anatomical descriptions given by the careful observers of the last century and of the first half of the present, a great many cases of single and multiple strictures of the small intestine reported which would strongly suggest a greater importance of the tubercular process in the causation of intestinal stricture than is usually accorded to it. In this connection the observations of Lalouette (1776), Bellot

[1] Hofmeister: Beiträge z. klin. Chirurg., Dritt. Heft, Jan., 1897.

(1809), Combe, C. (1813), Thillaye (1813), Bailey (1816), Heyne (1826), Goodrich (1829), Darrach (1829), Greenhow (1821), Roepke (1834), Roberts (1832), Rokitansky (1839), Ossipowski (1840), Hinckley (1841), Consbruch (1842), Landgraff (1843), Oppolzer (1841), Perrin (1852), Millard (1859), Lancereau (1859), Peter (1862), Dumontpallier (1863), etc., would be especially instructive to the student of the subject, not only from a pathogenetic point of view but as a clinical study of multiple stricture formation in the bowel as well.[1]

But as it is not my intention to discuss the pathology and clinical history of cicatricial stricture of the bowel except in so much as to call attention to its growing importance in the practice of abdominal surgery, I shall simply limit my remarks to intestinal strictures of tubercular origin, as these have a direct bearing upon the case reported in this paper. In reviewing some of the phases of this subject, I shall draw largely from the recent and valuable contribution by Fr. Hofmeister, of Tübingen, previouly quoted, to which I now freely acknowledge my indebtedness.

To begin with, it is interesting to know the number of strictures that may be found in one individual case. On this point we find that in twenty recorded cases of multiple stricture collected by Hofmeister, there were five cases (Koenig, Vohtz, Esmarch, Meyer, Eisenhardt) in which there were *two* strictures in each individual; *three, four,* and *five* strictures were found in cases reported by Frank, Koeberle, Trendelenburg, respectively; *six* strictures existed in each one of the patients reported by Litten and Homén; *seven* strictures in Rotter's case; *eight* in Fränkel's; and, finally, *twelve,* the greatest number thus far recorded in the same subject, in the cases reported by Fränkel (second case), Koenig, and Hofmeister respectively. In six cases the number of strictures is not accurately stated, and only vague designations are used, as "numerous constrictions," etc.

[1] Full references to contributions by authors quoted in this paragraph will be found on p. 65, "Intestines (stricture of)," Index Catalogue, Surgeon-General's Library, Washington, vii., 1886.

The vast majority of these (tubercular strictures) are found in the ileum.

Only in one case were the only existing strictures discovered in the colon (Eisenhardt, post-mortem examination). Sometimes one or more strictures coexist with typical tubercular tumors of the ileo-cæcal region, the ileal strictures being situated at a greater or less distance from the valve (Billroth, Koenig, Frank, Esmarch). But precisely in those cases which are distinguished by the greatest number of contractions (from four upward), the ileum is exclusively the seat of these constrictions. Furthermore, it is a notable fact that it is precisely when the strictures are multiple and are situated in the small intestine that we are likely to notice the most perfect type of cicatricial constriction—*i. e.*, the involution or healed form of intestinal tuberculosis. These peculiarities are typically illustrated by my case, in which almost all vestige of the original infection was lost in the cicatrizing process. In this case, probably the highest (nearest to the pylorus) multiple tubercular stricture thus far recorded, the tubercular process exhibited a remarkably slow and benign evolution. This fact is in accordance with the suggestion of Hofmeister, that in the small intestine tubercular ulcer exhibits a greater tendency to cicatrize and develop circular or annular constriction, because the infection is primarily more superficial (surface infection), while in the lower bowel, where single strictures occur most often, the tubercular infiltrations are deeper and more extensive, and the thick, wide, hypertrophic type of intestinal tuberculosis as described by Koenig is the rule.

The *distance* of the single strictures from one to another varies most widely (from a few centimetres to a half metre). In a case reported by Trendelenburg five strictures were distributed over a distance of 42 cm. (about $16\frac{3}{4}$ inches). In Koeberle's celebrated case there were four strictures in over 205 cms. (over 83 inches) of excised intestines. Boiffin even speaks of multiple strictures over the *whole* small intestine.

As to the *length* of the individual strictures, it is notable that in the course of multiple stricture in the small intestine the tendency of the stricture is to form narrow rings. In others they form elongated tubular contractions (8 cms., Meyer, Eisenhardt). Sometimes in strictures which are closely approximated, as in my case, the local conditions distinctly simulate the hypertrophic tumor-like forms of tuberculosis that are more clearly identified with the ileo-cæcal region.

As to the *calibre* of the strictures, they vary extremely, rarely, if ever, constituting an absolute atresia, but often closing so much as barely to admit a small No. 4 catheter, or even a fine probe.

A great interest attaches to the anatomical changes that are observed in the affected bowel above the stricture (afferent portion), and in the intestinal wall of the strictured portion. The relationship of acute obstruction by fecal and food masses to stricture, without actual atresia, and the sudden relief of some of these patients, even when on the verge of dissolution, should be remembered; but these considerations must be passed by with a mere reference in order to reach the most important phase of the subject, viz., the management and mode of intervention which is indicated in strictures, and in multiple strictures especially.

On this point the status of surgical evidence is furnished very thoroughly by Hofmeister, and I can do no better than to quote his summary: "In eighty-three collected cases of intestinal strictures of all kinds in which surgical interference was resorted to, including in this six exploratory laparotomies, fifty-two patients recovered (62.65 per cent.), and of the twenty-six fatal cases (31.33 per cent.), in only sixteen (19.3 per cent.) death was more or less directly attributable to the operation. Of course, the value of these statistical conclusions is exceedingly debatable, for it is probable that many fatal cases are not reported, and the use of the word 'cure' is also very elastic, and, to say the least, uncertain, especially when unaccompanied by detailed explanations. But the individual reports of some surgeons who have

recorded their uninterrupted cases in series are more instructive, as, for example, Czerny's experience, which embraces the reports of eleven cases of intestinal tuberculosis, three fatal, two of which were attributed to the operation, and six cures, which after one to three years were still under observation and doing well, and two other cases that had proved to be incurable, and were presumably only temporarily relieved."

"If we circumscribe our study to *multiple strictures* we find thirteen cases which were operated upon (including three exploratory laparotomies), with eight recoveries (61.54 per cent.), and five deaths (38.46 per cent.), of which three (23.1 per cent.) are attributable to the operation. If we were permitted to conclude from this statistical evidence alone, it would appear that the risks of operation in the *multiple* variety are about the same as in the *single* cases. But this conclusion is of no value practically, since the operator who undertakes an exploration for stricture of the bowels never knows whether he will find a single or a multiple stenotic condition. In other words, when he undertakes an operation of this character he must always bear in mind the possibility of multiple strictures. He must give due consideration to this possible contingency, and must be prepared to act accordingly.

"While it may appear theoretically much more simple to deal radically with single than with multiple strictures, there are single strictures which may offer insurmountable difficulties in the way of complete removal. Under all circumstances, the condition of the patient at the time of the operation is the dominant consideration." How much traumatism can he stand? how long can he be kept under the anæsthetic? are questions that must be answered before final action is undertaken. Of course, the ideal of surgical treatment in dealing with strictures of the bowel would be *enterectomy* or resection of the diseased and strictured sections. "The fact that fifty complete resections for single tubercular strictures, including cases in which an artificial anus was left after the excision, resulted in thirty-four cures (68 per cent.) and

fifteen deaths (30 per cent.), of which twelve (24 per cent.) are ascribable to the impracticability of resection, does not condemn the surgeon to inactivity. On the contrary, almost as good results may be obtained by entero-anastomosis (five cases with five cures), which will permit the re-establishment of the fecal circulation with a minimum of danger and often with prospect of radical remedy." Another procedure which we owe to the Billroth school, and which bids fair to supplant enterostomy in certain cases, though still a procedure that is in an evolutionary stage, is *partial exclusion of the obstructed and diseased portion of the bowel.* While *total* exclusion of the bowel is to be condemned, *partial* exclusion, as practised by Salzer, Bardenheuer, Hochenegg, Frank, Körte, and Eiselsberg, Obalinski, and Kammerer in this country, is at least worthy of trial in certain cases. It consists in the absolute isolation of the strictured portion of bowel with anastomosis or enterorrhaphy of the proximal and distal ends on each side of the excluded portion. The excluded portion is partially sutured to the abdominal incision, and an opening (enterostomy) is made to permit drainage of the isolated part. The advantages that may be claimed for this procedure over simple entero-anastomosis are, that while partial exclusion permits a re-establishment of the fecal circulation, the diseased bowel is entirely excluded from the contaminating contact of the feces, and that by this means the bowel is given absolute physiological rest. By this means involution and atrophy of the diseased area are favored, and a permanent cure may be obtained. It has the advantage over total resection that it obviates shock, hemorrhage, and other complications that might result from an attempt at excision of the diseased area.

Two other modes of relief are now left for consideration, and these are *enterostomy* or the formation of an artificial anus on the Nélaton plan, and enteroplasty on the plan of the Heinecke-Mikulicz pyloroplasty—by which the stricture is enlarged by the *modus operandi* of this well-known procedure.

In cases of multiple stricture the surgical conditions are

altered extraordinarily according to the *number* and the *situation* of the individual strictures. The more favorable cases are those in which the constrictions are closely distributed over relatively short sections of the intestine. In these cases, as illustrated by the writer's report, the strictures must be treated collectively, as if there were only one long stricture, and resection (enterectomy) should be the operation of election (*vide* cases reported by Koenig, Trendelenburg, Frank, and the author). On the other hand, when only a few (two) strictures exist, but these are separated by a long distance of sound intestine, the best course to follow is to attack the individual stenoses separately, and to resect, if possible, each single one in turn (Vohtz, Esmarch). To this ideal treatment, which removes the diseased part without sacrificing more intestine than that which is absolutely necessary, there are very narrow limitations. It stands to reason that we cannot ask too much of the usually ill-nourished patient, whose powers of resistance have been reduced to a minimum by the condition which calls for the operation. It is in these extreme conditions and when confronted by a great number of widely distributed strictures that the judgment of the operator is most severely taxed. The questions then resolve themselves to: Shall we resect the entire strictured area? Shall we exclude it? or perform anastomosis? or enterectomy? or can *any* operation be performed that will yield even a palliative result?

Cases of this complex type, in which many strictures of narrow calibre were distributed over the greater portion of the small intestine, are recorded by Boiffin, Fränkel, Rotter, Koenig, and Hofmeister.

It is very plain that when the very large portion of the bowel is involved total resection of the affected bowel is out of the question; Koeberle, it is true, succeeded in successfully removing 205 cms. of the ileum, and though he has had a few imitators, it is very doubtful that the sacrifice of so much bowel is physiologically safe or compatible with sound surgery. At any rate, success in such wholesale sacri-

fice of the bowel must follow as a very rare and exceptional event. To dream of relief by resection would be preposterous in those cases in which the whole small intestine is marked by cicatricial rings at variable and irregular intervals. In such extreme cases, which are, fortunately, clinical curiosities, there is nothing to be done but to close the abdomen and simply let the patient await the end. In cases of lesser severity a wise compromise may be made between individual resections of the stricture, entero-anatomosis, and exclusion. As to enterostomy on the Nélaton plan, it should always be kept in view only as an emergency operation when dealing with strictures or obstructions that are situated in the colon or low down in the ileum. If applied too high in the intestine the physiological exclusion of the remainder will result fatally in a few days, as the progressive emaciation and malnutrition will so diminish the patient's powers of resistance as to unfit him for further intervention. Finally, I shall close by adding two important recommendations made by Hofmeister: 1. In cases which present a history of gradual obstruction of the lower bowel the surgeon should be prepared to find multiple strictures, and in all such cases the exploration will not be complete until the entire bowel tract has passed under the eye and finger of the operator. 2. If called upon to operate for an acute obstruction (ileus) in a case of chronic obstipation, and there is much distention with gas, it is best to make a free abdominal incision at once, as Kussmaul suggests, by which the entire bowel mass can be rapidly examined and the seat of the obstruction promptly determined. It is only by this procedure that a proper diagnosis can be made and a proper decision quickly arrived at. Again,[1]

[1] A valuable report of a case of multiple tubercular strictures of the small intestine has been contributed recently in the Norsk Mag. for Lægevidensk., Jan., 1898, abstract in Semaine Médicale, p. 88, No. 11, Feb. 26, 1898, and in the very interesting and valuable experimental and clinical paper on "Intestinal Tuberculosis and its Surgical Treatment," by Dr. Oreste Margarucci (Il Policlinico, Rome, Anno v., No. 4, Feb. 15, 1898), which I regret has reached me too late to be utilized in the preparation of this paper. An exhaustive paper on "Intestinal Tuberculosis in its Surgical Aspect" is also being prepared by my distinguished friend Prof. Senn, which I know will prove to be one of the most instructive and exhaustive contributions that has appeared in this country on this important subject.

one of the prime requisites to success in the operative treatment of stricture of the bowel is not to wait too long after the onset of the symptoms which indicate chronic obstruction (repeated but intermittent paroxysms of abdominal pain with vomiting, obstipation, etc.), before proceeding to exploratory laparotomy. It is evident that when a stricture becomes markedly narrowed its lumen is liable to sudden obstruction by accidental fecal plugging. Under these circumstances all the phenomena of acute ileus are liable to present themselves rapidly, and the tympanites which complicates this condition will be added to the original difficulties of the case. Remembering that the chances of perfecting the intestinal technique are infinitely greater when the intestinal tract is empty, we should advise early exploration in a calm period whenever a careful and long observed history strongly suggested the possibility of chronic obstruction from the causes herein referred to.

Finally, a last word in reference to the special method of performing enterectomy in this case—Maunsell's method. I have had occasion to apply Maunsell's principle of invagination and intramucous suture through a fenestrum, in six cases of enterorrhaphy, including three gastro-enterostomies. In every instance but one, I have found the joint reliable and safe, and the method itself very practical and of easy application. But Maunsell's method is not applicable to all cases. The chief technical contra-indication for its performance is a very thick, fat, or inflamed mesentery, as this decidedly interferes with the amount of invagination required for a good suture. In such cases, Czerny-Lembert or other simple suture methods are preferable. A thick mesentery is also in the way of the proper application of the Murphy button, which in my experience is less safe, but a little more rapid, than the Maunsell method. In cases of multiple strictures at long distances, which would justify repeated resections at the same sitting, it is probable that a judicious combination of methods, viz., the button for the distal stricture with Maunsell's suture method for the highest, or even the button alone, would expedite the termination of the operation and yield the most satisfactory results.

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